

A Scientific Study on Physical Fitness Standard among Tribal School Girls of Andhra Pradesh through the AAHPER Youth Physical Fitness Test

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ABSTRACT

This study aimed to construct AAHPER youth physical fitness norms for different age groups of tribal school girls in Andhra Pradesh, and its secondary purpose was to investigate the reasons for the existing level of fitness. The AAHPER youth fitness test was selected as a technique in the construction of Physical fitness Norms for under-14 and under-17-year-old tribal school girls of Andhra Pradesh, consisting of two items that measure physical-related fitness tests: 1. shuttle run, 2. standing broad jump. The Data collected from the subjects, under-14-year-old and under-17-year-old tribal school girl students, were statistically analyzed by employing mean, standard deviation, and Hull scale score; then these scores were converted into Hull scale, and thereupon norms were constructed separately. Calculation of mean, standard deviation, and computation of norms were made by using the Hull scale for the chosen variables on 1. shuttle run, 2. standing broad jump. For both age groups, daily participation in physical activities helps school girls develop strength, speed, self-confidence, leadership qualities, and healthy lifestyle habits. The findings of the study suggested that physical education is an essential component for tribal school girls for good health, wellness, and a productive future.

Keywords: PHYSICAL fitness, Tribal, AAHER, shuttle Run, standing broad jump.

INTRODUCTION

Physical fitness encompasses speed, flexibility, rhythm, power, strength, coordination, muscular endurance, cardiovascular endurance, and agility. All those components are equated with the healthy functioning of the body. Another important component of physical fitness is athletic skill. Various aspects of physical fitness and skills are interrelated. It is the relation of one's ability to work and play with vigor and pleasure without undue fatigue. Fitness is not only a key factor in a healthy life in unforeseen emergencies, but also in the dynamic and creative life of human beings. **Clasher E, Corbin (1970).**

Measures of cardiorespiratory fitness, muscular strength, power, flexibility and body composition are examples of physical fitness, a collection of characteristics that indicate an individual's capacity to engage in physical activity. Large cohort studies have shown a connection between low cardiorespiratory fitness in late adolescence and early mortality, while cardiorespiratory fitness is positively correlated with better health in children and teenagers. Research suggests that children's cardiorespiratory fitness levels are falling globally. Measures of physical fitness provide distinct information about physical performance and may be related to health growth and development, although cardiorespiratory fitness appears to be more strongly correlated with health outcomes. **Racherl C, Colley et al. (2019).**

One of the biggest achievements to be honored as we move into the twenty-first century is the constant pursuit of fitness since the dawn of humanity. The need to live via hunting and gathering has motivated man's quest for fitness throughout primordial times. Fitness remains crucial to health and well-being today, even though it is no longer driven by subsistence needs. **Thanker & Amish Kumar G (2015)**

From the perspective of a coach or sports trainer, the phrase "physical fitness" means something else. According to them, the word "physical fitness" refers to the ability to perform well physically in a variety of sports and activities and to handle the external load imposed by different workouts. The ability to do tasks is how individuals define physical fitness. The capacity of an individual to fulfill environmental demands is known as physical fitness. **Harold Barrow, Rosemary et al. (1979).**

Under-14 Years

Under-14 years refers to individuals who have not attained their 14th birthday and are generally between 11 and 13 years of age in school sports classifications.

Under-17 Years

Under-17 years refers to individuals who have not attained their 17th birthday and generally fall within the age range of 14–16 years for educational and sports purposes.

The most recent version of test manual (AAHPER, 1976) contains the following.

Their analysis yields two factors gross body coordination and muscular explosiveness. Three items clustered under the speed factor are (I) shuttle run and standing broad jump. These results show that fewer than seven dimensions of youth fitness are being measured by the AAHPER test.

Both the age and classification norms were revised and published in 1965 in the revision test manual. The classification norms are based on the combination of age, height and weight. The normative data in the 1965 manual showed a considerable improvement on most test items for boys and girls at almost every age level. In 1975, the revised version was as follows.

- Agility is the ability of the muscles to adjust to rapid changes in movement direction. In any physical activity or game situation, the controlled ability to stop and start and to change direction rapidly,
- Power is a combination of strength and speed. $\text{Power} = \text{Work}/\text{time}$. Sprint running greatly depends upon power because it is essentially a series of body projections. When one considers the prevalence of running, jumping, throwing, kicking and striking.

Selection of Subjects

The primary purpose of study is to construct physical fitness norms for age group of Under-14 studying VI class to IX class and under-17 years are studying X to Intermediate in tribal school girls of Andhra Pradesh. To meet the purpose (under-14 years N=600 and under -17 years N=200) tribal girl students used as subjects. They were all selected from tribal schools of Andhra Pradesh. They were free to withdraw as respondent in case they feel any difficulty or discomfort during the test. The researcher has taken sufficient care and caution in counseling the sample respondent about the utility of physical fitness for a healthy body and also the purpose of the study.

Because of this, no dropouts as respondents and all the volunteered subjects voluntarily co-operated well throughout the period of test of AAHPER Youth Fitness Test. Scholar has been contacted with all the principals and physical education teachers of selected schools and the purpose of the study was explained to them. All of them readily agreed to extend full cooperation and ensured that the subjects would be made available for conducting the AAHPER Youth fitness test as and when required.

Selection of Test

The AAHPER Youth Physical Fitness Test Was Chosen For The Study. The test comprised the following items :

1. shuttle run
2. standing broad jump

Shuttle Run

Agility is the ability of the muscles to adjust to rapid changes in movement direction. In any physical activity or game situation, the controlled ability to stop and start and to change direction rapidly, is essential, and this quality determines one's performance level and the speed of acquiring any skill. Agility is a complicated and complex quality with no single criterion for its evaluation. Agility varies from activity to activity. The importance of agility in athletic performance can be summarized as follows: certain activities are fundamental to good performance and may even be the most important single characteristic, while in other activities, agility is practically non-contributing. In the majority of activities, performance will improve with increased agility.

Standing Broad Jump

Power

Power combines strength and speed. $\text{Power} = \text{Work}/\text{time}$. Sprint running greatly depends upon power because it is essentially a series of body projections. When one considers the prevalence of running, jumping, throwing, kicking and striking in athletics, the significance of power performance becomes apparent. Explosive strength is the ability of a sportsman to overcome resistance at high speed. **Pothuri Vijaya Kumari (2004).**

Objectives of The Study

1. To examine skillful and effective manner of tribal school girls in all the selected activities in which they engage in the physical education program.
2. To study for better understanding and appreciation of movement among school girls in making their lives more meaningful purposive and productive.
3. To analyze certain scientific principals concerned with movement.
4. To develop better inter personal relationship through the media of games and sports.
5. To examine the responses to body organic systems in a healthful way.

Selection of Variables

In testing these variables, the AAPHERD Youth Fitness Test with TWO items of

Shuttle Run

Standing Broad Jump tests were conducted to collect the data.

Table-1: Criterion Variables and Their Tests (Under-14years And Under-17 Years)

Criterion Variables	Test	Units
AGILITY	SHUTTLE RUN	seconds
POWER	SHUTTLE RUN	meters

Analysis of the Data and Results of the Study

The primary purpose of this investigation is to develop AAHPER youth Physical Fitness norms for different age groups of tribal school girls in Andhra Pradesh. The purpose of this study is to establish norms for selected physical fitness variables for different age groups (under-14 years and under-17 years) of girls studying in tribal schools in Andhra Pradesh. To achieve this purpose, Girls (N=600 under- 14 years and N= 200 under -17 years) were selected as subjects. The Data collected from the subjects under-14 years and

under-17 years tribal school girl students were statistically analysed by employing mean, standard deviation and Hull scale score, then these scores were converted into hull scale and thereupon norms constructed separately. Calculation of mean, standard deviation and computation of norms were made by using the hull scale for the chosen variables on , Agility And Power For Both Age Groups.

Table-2: Mean, Standard Deviations and Hull Scale Values For All Variables of Under-14 and Under-17 Years Tribal Girls of Andhra Pradesh.

TESTS	MEANS	STANDARD DEVIATIONS	HHULL SCALE VALUES
SHUTTLE RUN (under-14 years)	20.36	4.808	0.336
STANDING BROAD JUMP	1.375	0.284	0.0199
SHUTTLE RUN (under-17 years)	20.702	4.635	0.324
STANDING BROAD JUMP	1.518	0.2331	0.0163

Table-3: Mean, Standard Deviations and Hull Scale Scores for the Performance of SHUTTLE RUN For Under-14 Years Tribal School Girls of Andhra Pradesh. (Score in Number)

S. No	Intervals	<i>f</i>	<i>d</i>	<i>fd</i>	<i>fd²</i>
1	9.1–11.5	19	-4	-76	304
2	11.6–14	39	-3	-117	351
3	14.1–16.5	65	-2	-130	260
4	16.6–19	109	-1	-109	109
5	19.1–21.5	153	0	0	0
6	21.6–24	85	1	85	85
7	24.1–26.5	63	2	126	252
8	26.6–29	42	3	126	378
9	29.1–31.5	16	4	64	256
10	31.6–34	9	5	45	225
		N=600		$\sum fd = 14$	$\sum fd^2 = 2220$

Since the numerical value of time and the standard of performance go in inverse proportion, the hull scale of 0.336 seconds is deducted from the mean score of 20.36 seconds. Hence, the agility performance for the 51st score is 20.02 seconds. Similarly, for the 49th score, the hull scale value is added to the mean score, resulting in 20.70 seconds. A subject performing for 28.78 seconds secured the 25th point on the scale. Similarly, the subject who performed in 11.94 seconds got 75 points on the scale. A scale of a subject performing above 3.53 seconds is 100 points. In scale A, a subject who performs above 37.19 seconds receives 0 points.

Table-4: Hull Scale Norms For The Performance of AGILITY For Under-14 Years Tribal School Girls of Andhra Pradesh

(Score in numbers)

Hull scale	0	1	2	3	4	5	6	7	8	9
00	0	1	1	2	2	2	3	3	4	4
10	5	5	6	6	7	7	8	8	9	9
20	10	10	11	11	12	12	13	13	14	14
30	15	15	16	16	17	17	18	18	19	19
40	20	20	21	21	22	22	23	23	24	24
50	24	25	25	26	26	27	27	28	28	29

60	29	30	30	31	31	32	32	33	33	34
70	34	35	35	36	36	37	37	38	38	39
80	39	40	40	41	41	42	42	43	43	44
90	44	45	45	46	46	46	47	47	48	48
100	49									

Table-5: Grades For Constructed Norms For AGILITY of Under-14 Years Tribal School Girls Of Andhra Pradesh.

Scores	Grades	Subjects in Each Grade	Percentage
25 and below	Fail	29	5
26-35	Below average	126	21
36-50	Average	163	27
51-65	Above average	137	23
66-75	Good	107	18
75 and above	Outstanding	38	6
		600	100%

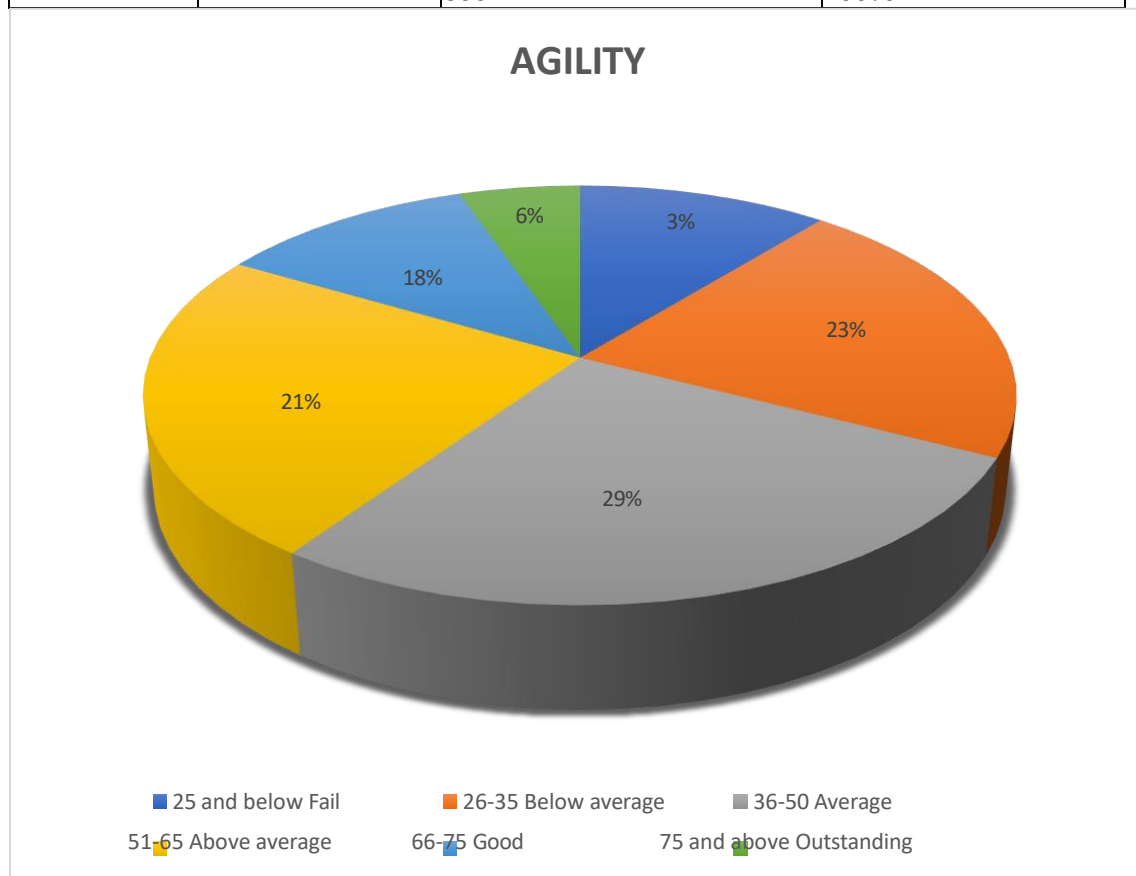


Figure 1: Pie chart for Agility

Table-6: Mean, Standard Deviations and Hull Scale Scores For The Performance of power For Under-14 Years Tribal School Girls of Andhra Pradesh

(Scores In Seconds)

S. No	Intervals	<i>f</i>	<i>d</i>	<i>fd</i>	<i>fd</i> ²
1	0.71–0.85	15	-4	-60	240
2	0.86–1.00	43	-3	-129	387
3	1.01–1.15	61	-2	-122	244

4	1.16–1.30	129	-1	-129	129
5	1.31–1.45	146	0	0	0
6	1.46–1.60	92	1	92	92
7	1.61–1.75	53	2	106	212
8	1.76–1.90	32	3	96	288
9	1.91–2.05	18	4	72	288
10	2.06–2.20	11	5	55	275
		N=600		$\sum fd = -19$	$\sum fd^2 = 2155$

Table-7: Hull Scale Norms For The Performance of Power for Under-14 Years Tribal School of Andhra Pradesh

Hall scale	0	1	2	3	4	5	6	7	8	9
00	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56
10	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76
20	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96
30	0.98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16
40	1.18	1.20	1.22	1.24	1.26	1.28	1.30	1.32	1.34	1.36
50	1.39	1.40	1.42	1.43	1.45	1.47	1.49	1.51	1.53	1.55
60	1.57	1.59	1.61	1.63	1.65	1.67	1.69	1.71	1.73	1.75
70	1.77	1.79	1.81	1.83	1.85	1.87	1.89	1.91	1.93	1.95
80	1.97	1.99	2.01	2.03	2.05	2.07	2.09	2.11	2.13	2.15
90	2.17	2.19	2.21	2.23	2.25	2.27	2.29	2.31	2.33	2.35
100	2.37									

To construct the norms for the power performance of tribal school girls of Andhra Pradesh, the hull scale value of 0.0199 is serially added to and subtracted from the mean to determine values from zero to one hundred on the scale. When the hull scale value of 0.0199 meters is added to the mean score of 1.375, the power performance for the 51st score is 1.40 meters.

Similarly, for the 49th score, the hull scale is subtracted from the mean, yielding 1.36 meters. A subject performing 1.87 meters obtained 75 points on the scale. In that case, a subject performing 2.37 meters scored 100 points; subjects performing below 0.38 meters scored 0 points. The constructed norms from 0 to 100 for power performance among tribal school girls under 14 years are displayed.

Table-8: Grades For Constructed Norms For The Power Of Under-14 Years Tribal School Girls of Andhra Pradesh

Scores	Grades	Subjects in Each Grade	Percentage
25 and below	Fail	28	5
26-35	Below average	119	20
36-50	Average	182	30
51-65	Above average	126	21
66-75	Good	107	18
75 and above	Outstanding	38	6
		600	100%

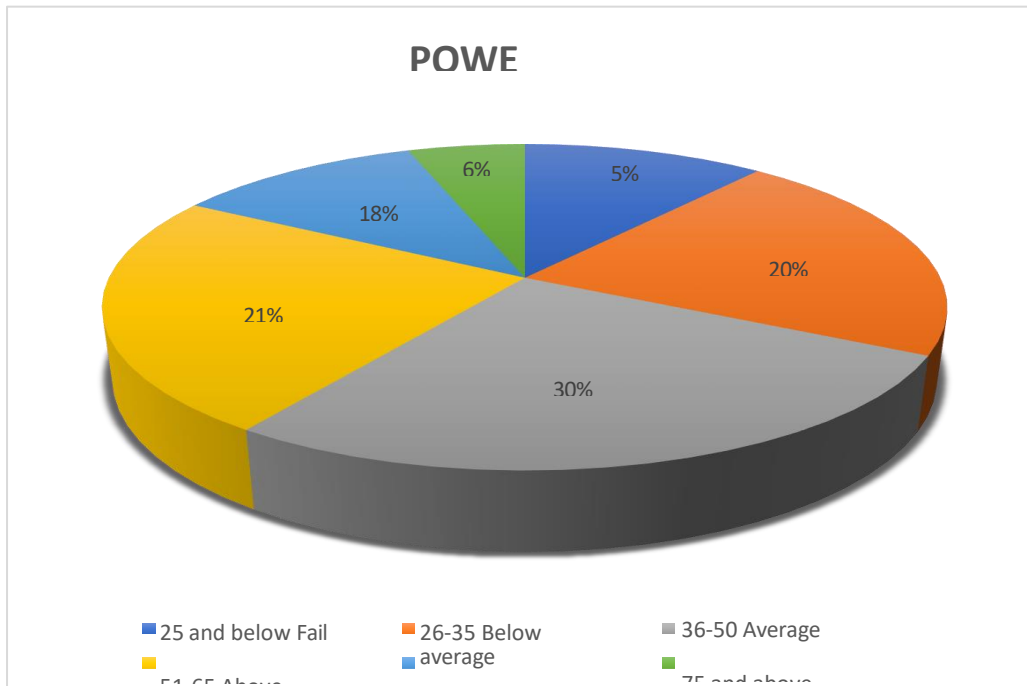


Figure 2: Pie chart for Power

Table-9: Mean, Standard Deviations and Hull Scale Scores For The Performance of Agility for Under-17-Year-Old Tribal School Girls of Andhra Pradesh

(Score In Numbers)

S. No	Intervals	<i>f</i>	<i>d</i>	<i>fd</i>	<i>fd</i> ²
1	9.0 – 11.4	4	-4	-16	64
2	11.5 – 13.8	8	-3	-24	72
3	13.9 – 16.2	17	-2	-34	68
4	16.3 – 18.6	36	-1	-36	36
5	18.7 – 21.0	53	0	0	0
6	21.1– 23.4	32	1	32	32
7	23.5 – 25.8	22	2	44	88
8	25.9 – 28.2	13	3	39	117
9	28.3 – 30.6	9	4	36	144
10	30.7 – 33.0	6	5	30	150
		N=200		Σ <i>fd</i> = 71	Σ <i>fd</i>² = 771

Since the numerical value of time and the standard of performance go in inverse proportion, the hull scale of 0.324 seconds is deducted from the mean score of 20.702 seconds. Hence, the agility performance for the 51st score is 20.378 seconds. Similarly, for the 49th score, the hull scale value is added to the mean score, resulting in 21.026 seconds.

A subject performing for 28.802 seconds secured the 25th point on the scale. Similarly, the subject who performed in 12.602 seconds got 75 points on the scale. A scale with a subject performing above 36.902 seconds has 0 point The hull value is constructed from 0 to 100 for the agility performance for tribal school girls under-17 years.

Table-10: Hull Scale Norms For The Performance of Aglity For Under-17 Years Tribal School Girls of Andhra Pradesh (Number)

Hull Scale	0	1	2	3	4	5	6	7	8	9
00	36.902	36.578	36.254	35.930	35.606	35.282	34.958	34.634	34.310	33.986
10	33.662	33.338	33.014	32.690	32.366	32.042	31.718	31.394	31.070	30.746
20	30.422	30.098	29.774	29.450	29.126	28.802	28.478	28.154	27.830	27.506
30	27.182	26.858	26.534	26.210	25.886	25.562	25.238	24.914	24.590	24.266
40	23.942	23.618	23.294	22.970	22.646	22.322	21.998	21.674	21.350	21.026
50	20.702	20.378	20.054	19.730	19.406	19.082	18.758	18.434	18.110	17.786
60	17.462	17.138	16.814	16.490	16.166	15.842	15.518	15.194	14.870	14.546
70	14.222	13.898	13.574	13.250	12.926	12.602	12.278	11.954	11.630	11.306
80	10.982	10.658	10.334	10.010	9.686	9.362	9.038	8.714	8.390	8.066
90	7.742	7.418	7.094	6.770	6.446	6.122	5.798	5.474	5.150	4.826
100	4.502									

Table-11: Grades For Constructed Norms for Agility of Under-17-Year-Old Tribal School Girls of Andhra Pradesh

Scores	Grades	Subjects in Each Grade	Percentage
25 and below	Fail	6	3
26-35	Below average	16	8
36-50	Average	82	41
51-65	Above average	73	36
66-75	Good	18	9
75 and above	Outstanding	5	3
		200	100%

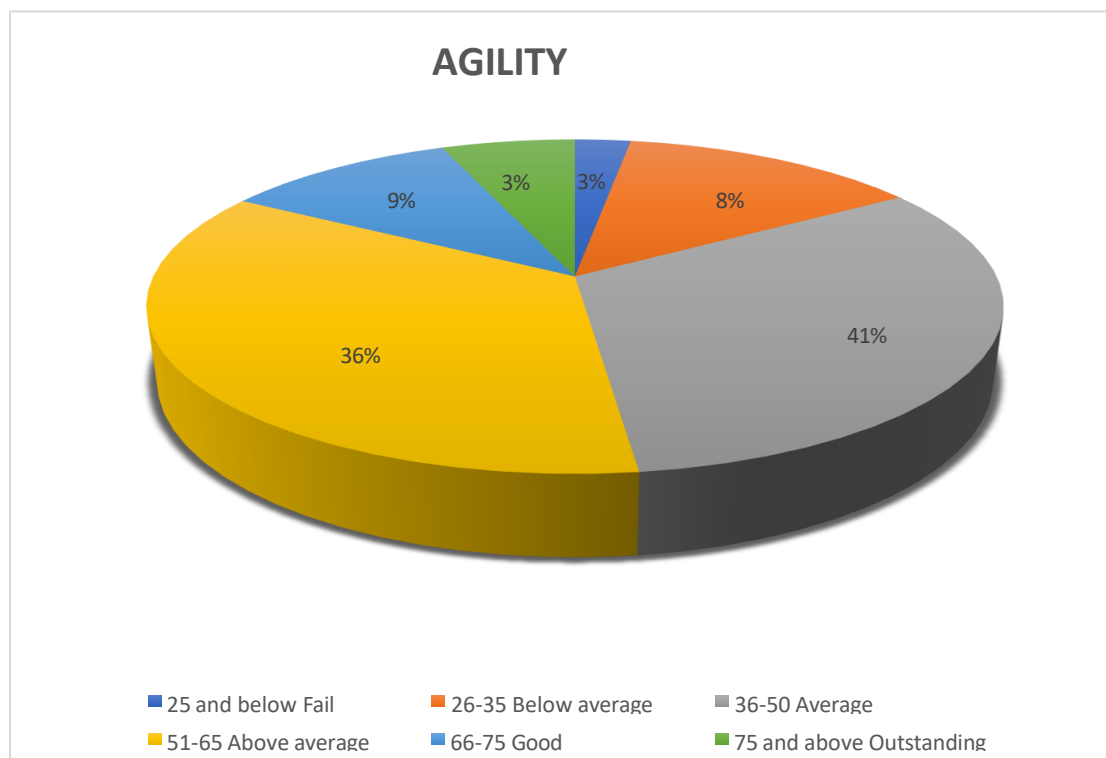


Figure 3: Pie chart for Agility

Table-12: Mean, Standard Deviations and Hull Scale Scores For The Performance of Power For Under-17 Years Tribal School Girls of Andhra Pradesh

(Score in meters)

S. No	Intervals	<i>f</i>	<i>d</i>	<i>fd</i>	<i>fd</i> ²
1	1.00 – 1.12	4	-3	-12	36
2	1.13 – 1.24	14	-2	-28	56
3	1.25 – 1.36	37	-1	-37	37
4	1.37 – 1.48	49	0	0	0
5	1.49 – 1.60	33	1	33	33
6	1.61 – 1.72	24	2	48	96
7	1.73 – 1.84	17	3	51	153
8	1.85 – 1.96	12	4	48	192
9	1.97 – 2.08	8	5	40	200
10	2.09 – 2.20	2	6	12	72
		N=200		$\sum fd = 155$	$\sum fd^2 = 875$

To construct the norms for the power performance for tribal school girls of Andhra Pradesh, the hull scale value of 0.0163 is serially added to and subtracted from the mean to determine the value from zero to hundred on the scale. When the hull scale value of 0.0163 metre is added to the mean score 1.518 the power performance for the 51th score is 1.5343 meters. Similarly, for the 49th score hull scale is deducted from the mean and is calculated as 1.5017 meters, a subject performing 1.9255 meters obtained 75 points in scale. Like that a subject performing 2.3330 meters scored 100 points for subjects' performance below 0.7030 metres has 0 point. The norms constructed from 0 to 100 points for power performance for tribal school girls under-17 years is displayed.

Table-13: Hull Scale Norms For The Performance of Power For Under-17 Years Tribal School Girls of Andhra Pradesh

Hull scale	0	1	2	3	4	5	6	7	8	9
00	0.7030	0.7193	0.7356	0.7519	0.7682	0.7845	0.8008	0.8171	0.8334	0.8497
10	0.8660	0.8823	0.8986	0.9149	0.9312	0.9475	0.9638	0.9801	0.9964	1.0127
20	1.0290	1.0453	1.0616	1.0779	1.0942	1.1105	1.1268	1.1431	1.1594	1.1757
30	1.1920	1.2083	1.2246	1.2409	1.2572	1.2735	1.2898	1.3061	1.3224	1.3387
40	1.3550	1.3713	1.3876	1.4039	1.4202	1.4365	1.4528	1.4691	1.4854	1.5017
50	1.5180	1.5343	1.5506	1.5669	1.5832	1.5995	1.6158	1.6321	1.6484	1.6647
60	1.6810	1.6973	1.7136	1.7299	1.7462	1.7625	1.7788	1.7951	1.8114	1.8277
70	1.8440	1.8603	1.8766	1.8929	1.9092	1.9255	1.9418	1.9581	1.9744	1.9907
80	2.0070	2.0233	2.0396	2.0559	2.0722	2.0885	2.1048	2.1211	2.1374	2.1537
90	2.1700	2.1863	2.2026	2.2189	2.2352	2.2515	2.2678	2.2841	2.3004	2.3167
100	2.3330									

On the basis of the above constructed table, the performance on power for under-17years Tribal school girls calculated quantitatively and grades, pie chart and hull scale scores are presented in Table-13.

Table-14: Grades For Constructed Norms For The Power of Under-17 Years Tribal School Girls of Andhra Pradesh

Scores	Grades	Subjects in Each Grade	Percentage
25 and below	Fail	8	4

26-35	Below average	27	14
36-50	Average	72	36
51-65	Above average	65	32
66-75	Good	18	9
75 and above	Outstanding	10	5
		200	100%

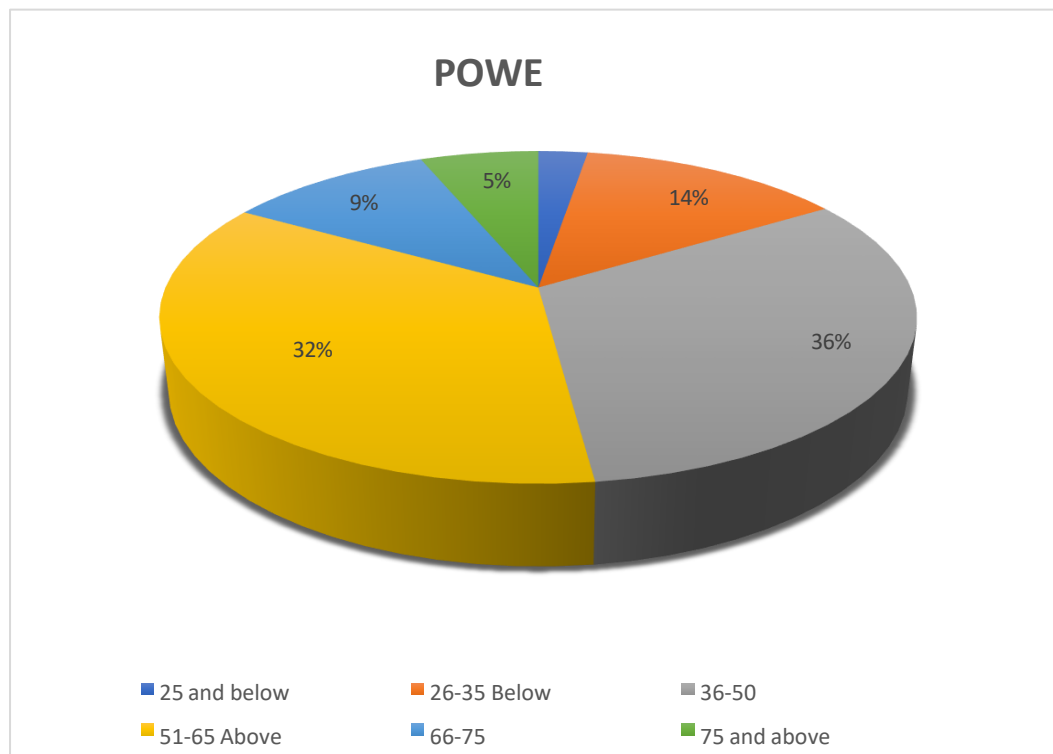


Figure 4: Pic chart for Power

DISCUSSION ON FINDING

The present study was conducted to construct AAHPER Youth Physical Fitness Norms for different age groups of tribal school girls of Andhra Pradesh. The findings revealed significant variations in physical fitness components among the subjects, indicating differences in agility and power of both age groups. The results are discussed by comparing the results of a study by **Sheth and Shethal (2015)**.

OVERALL DISCUSSION

The present study revealed that physical fitness components improved progressively with age among tribal school girls of Andhra Pradesh. Better performances were observed in shoulder strength, abdominal strength, agility, power, speed and endurance. These improvements can be attributed to biological maturation, physical growth, increased muscular development and regular engagement in physical activities.

The constructed norms provide a scientific basis for evaluating and classifying the fitness status of tribal school girls and can serve as useful reference indicators for physical education teachers, coaches and researchers. Furthermore, the norms may assist in talent identification, fitness assessment and the development of age-specific training programs for tribal school populations.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The norms are constructed for AAHPER youth physical fitness variables for the tribals of under-14 years and under-17 years school girls of Andhra Pradesh. The test variables are Agility and power. In Physical Education & Sports the norms were constructed for the variables of fitness, health etc. for normal population in Andhra Pradesh. Whereas the norms for AAHPER Youth Physical Fitness for tribal girls were not made, hence, the investigator felt it as a need to establish the norms for tribal girls of different age groups of Andhra Pradesh, to disclose the fitness standards of a special population of Andhra Pradesh. Hence, the investigator has made a bone of extension in the area of construction of norms. This would become a manual for tribal school principals and coaches, Physical Education Teachers and students to chalk out a programming in physical activity.

Conclusion

The study emphasized the importance of physical education in the overall development of tribal school girls. Physical education contributes significantly to physical fitness, mental well-being, emotional stability, social adjustment and academic achievement. Regular participation in physical activities helps school girls develop strength, endurance, self-confidence, leadership qualities and healthy lifestyle habits. The findings of the study suggested that physical education is an essential component for tribal school girls for good health, wellness and a productive future.

On the basis of hull scale norms in the performance of agility and power for tribal school girls under-14 years and 17 years of Andhra Pradesh.

Recommendations

Based on the findings, it can be concluded that physical education has a positive impact on the holistic development of school girls. It enhances physical health, improves. Psychological well-being, promotes social interaction and fosters lifelong fitness habits. Therefore, schools should provide adequate facilities, qualified physical Education Teachers and equal opportunities for girls to participate in sports and physical activities. Promoting Physical Education among school girls will contribute to the development of healthier, more confident and socially responsible citizens. The promotion of Physical Education and Sports is accepted as moral and social responsibility of each nation. Hence, all education institutions including schools should focus their attention on sports activities. So that it must be recognized as crucial goal in modern life. Absence of it provides base for crop up of a problem; in which all academic intellectuals and the government become collective partner. Hence, there is every need to deal all the issues concerning the health of human beings by placing a foundation at the gross-root level.

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