



HAND GRIP TEST FOR 9TH STANDARD GIRLS IN AHMEDNAGAR DISTRICT: A STUDY

MAGAR S.B.¹ AND SHIRKE R.D.^{2*}

¹New Arts, Commerce and Science College, Ahmednagar- 414001, MS, India.

²Savitri Bai Phule College, Pimpalgaon Pisa- 413703, MS, India.

*Corresponding Author: Email- shirkeravindra33@gmail.com

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Abstract- Strength is considered as one of the fitness components. The aim of the study was to find out the strength of the hand muscle of 9th standard girls. The study was conducted on 2480 girls of Ahmednagar district studying in 9th standard. It was found that the girls living in urban area has more strength than the girls living in rural areas.

Keywords- fitness components, strength of the hand muscle, 9th standard girls, Ahmednagar district, urban area, rural area

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Introduction

The purpose of this test is to measure the maximum isometric strength of the hand and forearm muscles. Handgrip strength is important for any sport in which the hands are used for catching, throwing or lifting. Also, as a general rule people with strong hands tend to be strong elsewhere, so this test is often used as a general test of strength. The students should hold the dynamometer in the hand to be tested, with the arm at right angles and the elbow by the side of the body. The handle of the dynamometer is adjusted as per the necessary requirement. The base should rest on first metacarpal (heel of palm), while the handle should rest on middle of four fingers. When ready the student squeezes the dynamometer with maximum effort, which is maintained for about 5 seconds. No other body movement is allowed. The student should be strongly encouraged to give a maximum effort. The dynamometer is calibrated regularly to ensure consistent results. We have carried this test to find out the strength of the 9th standard girls living in Ahmednagar district.

Objective

- To find out the strength of hand grip of 9th standard girls of Ahmednagar district
- To prepare norms for motor fitness test for the 9th standard girls.

Hypothesis

- Skill test selected for research work are standard and calibrated.

- Responses of girls are very good for Physical fitness test.

Methodology

The study was conducted on 2480 girls studying in 9th standard and living in Ahmednagar districts during the period Nov. 2012- Jan 2013. Competitive performance was taken during the trials. The performance in under given test were recorded. The grip dynamometer equipment were used for measuring the strength of muscle. Students were instructed to stand on vertical position and gripped with dynamometer in either of one hand. They were also instructed to pull with maximum power. They were given two three chances for measuring the strength by any one hand. The best performances were recorded. [Fig-1] shows the process of conducting the test.



Fig. 1- process of conducting the Hand Grip test.

Sample Size

Ahmednagar district consist the 14 talukas in which there are 819 secondary schools. Five schools from each taluka were randomly selected for the study. Total samples 2480 were selected for the test.

Limitations

- If dynamometer is not adjusted properly as per the hand size then there will be chance of error.
- Special equipments are necessary.

Analysis

The different statistical tests were carried out to analyze the data. Mainly Standard deviation, ANOVA test were used.

Table 1- Hand Grip Strength Test

Statistics	Hand Grip
Mean	11.89
Median	12
Mode	12
S.D.	1.92
Skewness	0.17
Std. error	0.04
Kurtosis	-0.11
Range	13
Min	6
Max	19

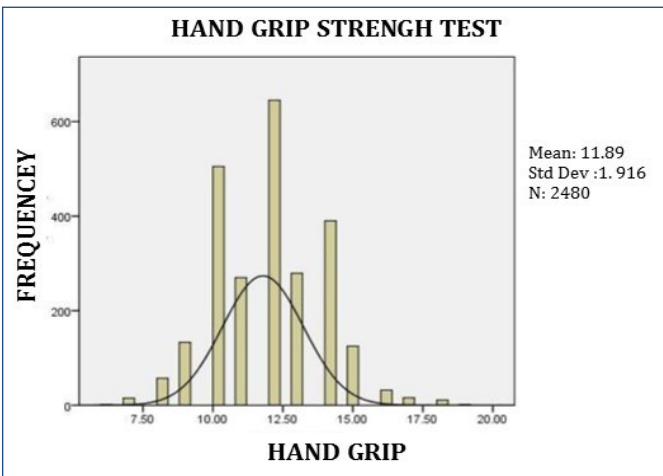


Fig. 2- Hand Grip Strength Test

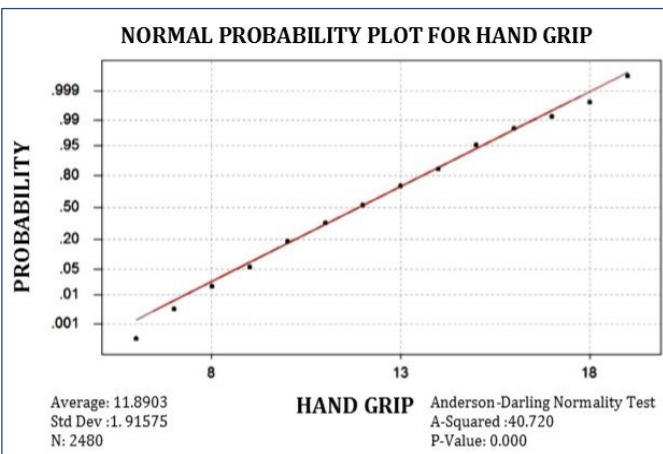


Fig. 3- Normal Probability plot for Hand Grip

Table 2- Hand Grip Strength Test : Norms

Percent	HAND GRIP	Percent	HAND GRIP	Percent	HAND GRIP	Percent	HAND GRIP	Percent	HAND GRIP
99	16.35	79	13.44	59	12.33	39	11.36	19	10.21
98	15.82	78	13.37	58	12.28	38	11.31	18	10.14
97	15.49	77	13.31	57	12.23	37	11.25	17	10.06
96	15.24	76	13.24	56	12.18	36	11.2	16	9.99
95	15.04	75	13.18	55	12.13	35	11.15	15	9.9
94	14.87	74	13.12	54	12.08	34	11.1	14	9.82
93	14.72	73	13.06	53	12.03	33	11.05	13	9.73
92	14.58	72	13.01	52	11.99	32	10.99	12	9.64
91	14.46	71	12.95	51	11.94	31	10.94	11	9.54
90	14.35	70	12.89	50	11.89	30	10.89	10	9.44
89	14.24	69	12.84	49	11.84	29	10.83	9	9.32
88	14.14	68	12.79	48	11.79	28	10.77	8	9.2
87	14.05	67	12.73	47	11.75	27	10.72	7	9.06
86	13.96	66	12.68	46	11.7	26	10.66	6	8.91
85	13.88	65	12.63	45	11.65	25	10.6	5	8.74
84	13.8	64	12.58	44	11.6	24	10.54	4	8.54
83	13.72	63	12.53	43	11.55	23	10.47	3	8.29
82	13.64	62	12.48	42	11.5	22	10.41	2	7.96
81	13.57	61	12.43	41	11.45	21	10.35	1	7.43
80	13.5	60	12.38	40	11.4	20	10.28		

One-way ANOVA: HAND GRIP versus TALUKA

Table 3- Analysis of Variance for HAND GRIP

Source	DF	SS	MS	F	P
TALUKA	13	300.31	23.1	6.48	0
Error	2466	8797.86	3.57		
Total	2479	9098.17			

Table 4- Individual 95% CIs For Mean Based on Pooled Std. Dev.

Level	N	Mean	Std. Dev.		
1	177	12.706	1.788	(---*---)	
2	174	11.994	1.984	(---*---)	
3	174	12.368	1.909	(---*---)	
4	140	11.6	1.631	(---*---)	
5	175	12.189	2.206	(---*---)	
6	208	11.885	1.985	(---*---)	
7	174	11.989	1.714	(---*---)	
8	175	11.674	1.906	(---*---)	
9	210	11.324	2.036	(---*---)	
10	174	11.523	1.746	(---*---)	
11	175	11.64	1.826	(---*---)	
12	175	11.954	2.062	(---*---)	
13	174	11.845	1.688	(---*---)	
14	175	11.823	1.771	(---*---)	
Pooled StDev =	1.889	11.40	12.00	12.60	13.20

Conclusion

It can be concluded from the test The girls were find average muscle strength of 11.87 Kg. From the observation it is found that 50 percent girls have blow 12 kg strength and remaining have found above more than 12 kg. Result shows that Hand grip standard deviation was 1.92, skewness 0.17, kurtosis 0.11 and 95 percent girls have found 11.55 kg to 12.23 kg strength. Hence it can be concluded that the 9th standard girls have close to normal probability curve.

From the ANOVA test and Box Plot it is observed that, Ahmednagar city girls strength were in between 12.50 to 13 kg. It was also observed that for the same test the girls hand grip strength test from Akole tahsil were 11 Kg to 11. 60 Kg. Overall Ahmednagar city girls have more strength of 1 Kg to 1.20 Kg compared with girls living in Akole Tahasil.

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