

## An Assessment of Muscular Fitness of Adolescent Children in Imphal East District, Manipur

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**ABSTRACT:** The main purpose of the study is to find out “An assessment of muscular fitness of adolescent children in Imphal East district” in Manipur. Looking towards the nature of this study, the researcher has investigated the following objectives in perspective: to survey the muscular fitness status of school going girls and boys. For the purpose of this study a total of 225 (n=225) school going students both boys and girls (150 boys and 75 girls) have been delimited for the study. The study was delimited to the boys and girls of 8<sup>th</sup> to 10<sup>th</sup> class i.e. school students (Adolescent children). The chronological age of the subjects has been delimited to 12 to 15 years further. The study was further confined to the private schools of Imphal East district. The study was further confined to the Muscular Fitness. Further study was delimited to Kraus Weber test. Before collecting the data, the method and procedure of performing each tests was explained and demonstrated to the subjects. For determining the results of the study percentage method was employed.

**Keywords:** Muscular Strength, Flexibility of Muscles, Adolescent Children

### Introduction

Muscle are meant to be used give them extra work and they grow bigger and strong. An individual's physical strength is firm by two factors; the cross-sectional area of muscle fibers employs to produce force and the greatness of the staffing. Individuals with a high quantity of type I slow twitch muscle fibers will be comparatively weaker than a comparable individual with a high quantity of type II fast twitch fibers, but would have a better fundamental ability for physical endurance. The hereditary heritage of muscle fiber type sets the outmost borders of physical strength possible (excluding the use of attractive agents such as testosterone), though the only position contained by this envelope is firm by training. Shorter limbs are capable to elevate more weight, for an agreed cross-section. It is also different to gain muscle in person to person, base mainly upon genes dictate the amounts of hormones secreted, but also on sex, age, health of the person, and enough nutrients in diet. To resolve maximum muscular strength one rep maximum is the test. To move, elevate things and do day-to-day

out or weight we can lift is by our muscular strength. Muscular strength is important for many reasons. There are many ways to get better muscular strength. In resistance training equipment like medicine balls or weight machines resistance tubes or bands can use during exercises.

## II. STATEMENT OF THE PROBLEM

The purpose of the study is to find out “An assessment of muscular fitness of adolescent children in Imphal East district, Manipur”.

## III. OBJECTIVES

Looking towards the nature of this study, the researcher has investigated the following objective in perspective:

1. To survey the muscular fitness status of school going girls and boys.

## IV. DELIMITATIONS

The study was delimited in the following aspects:

1. A total of 225 (n=225) school going students both boys and girls (150 boys and 75 girls) have been delimited for the study.
2. The study was enclosed to the boys and girls of 8<sup>th</sup> to 10<sup>th</sup> class.
3. The chronological age (adolescent) of the subjects has been delimited to 12 to 15 years further.
4. The study was further confined to the private schools of Imphal East district, Manipur with Muscular Fitness.
5. It was bordered to Kraus Weber test.

## V. LIMITATIONS

To conduct this investigation, the researcher followed necessary steps with proper care. In spite of this, he observed some shortcomings, which have been recorded in this section as follows:

1. In this study researcher could not control students fitness, hobbies, social and family conditions which might have affected the result.
2. The individual differences in performing the tests were also considered as one of the limitation for the present study, student's mood, and environment were also one of the limitations for the study.
3. Subjects were undergoing their regular academic course therefore factors such as curriculum load, time scheduling, different liabilities.

## VI. OPERATIONAL DEFINITION

**Muscular Strength:** The muscular strength is defined as maximum amount of force that muscles can make in a single maximum attempt.

**Flexibility:** Flexibility is defined as maximum range of movement possible at a joint.

**Muscles:** Muscles is defined as body tissues which consists of cells that deal when lengthened of straightened.

## VI. SIGNIFICANCE OF THE STUDY

1. This study will make aware about muscular fitness of school going children.
2. Result of the study will help the coaches in planning the coaching program to develop muscular fitness.
3. The research of the study will help to know real fitness level of student.
4. This study will get the present status about muscular fitness of school going children in Imphal East district, Manipur.

## VII. METHODOLOGY

In this chapter the procedure adopted for the source of data, selection of subjects, the criterion measures, collection of data, procedure of administering the test and administration of the statistical procedure used for analyzing the data has been described.

## VIII. POPULATION

For the present study private school going students (adolescent age) of Imphal East district, Manipur, age ranged from 12 to 15 years was selected. The investigator collected the name list of students from five private schools. Those who full fill the criteria of the study were selected as subjects. 30 boys and 15 girls were selected from each school.

## IX. SELECTION OF SUBJECTS

A total 150 boys and 75 girls from five different private schools of Imphal East district, Manipur were selected as subjects for the study.

## X. SELECTION OF VARIABLES

For this study Kraus-Weber Abdominal Strength Test 1, 2, 3, 4, 5 and 6 were selected.

## XI. ADMINISTRATION OF THE TEST

1. Test: - Kraus-Weber Abdominal Strength (Strength of Abdominal and Psoas muscles).  
Objective: - To measure the Strength of Abdominal plus Psoas muscles.  
Procedure: - The subject must to lie down on a table in supine position (back resting on the table) with his hands behind the neck. The tester must hold the subject's feet down and asks him/her to do one sit-up.  
Scoring: - If the subject is unable to raise shoulder from the table, zero score is given and is graded as fail. A score of ten is given if the subject is to do one complete sit-up.
2. Test: - Kraus-Weber Abdominal Strength (Strength of abdominal minus Psoas muscles).  
Objective: - To measure the Strength of Abdominal minus Psoas muscles.  
Procedure: - The subject must lie down in supine position with hands behind neck and knee bent. The tester holds the feet to keep the knee bent and feet down and the subject to do a sit-up.  
Scoring: - If the subject is unable to raise shoulder from the table, zero score is given and is graded as fail. A score of ten is given if the subject is to do one complete sit-up.
3. Test: - Kraus-Weber Abdominal Strength (the strength of the lower abdominal muscles).  
Objective: - To measure the strength of the lower abdominal muscles.

Procedure:- The subject must lie down in supine position with hands behind neck and feet raised to the height of 10 inches with knee straight. The tester start counting as soon as the subject has raised his/her feet to the height of 10 inches.

Scoring: - The subject is graded fail if he /she cannot hold raised feet for 10 seconds. Each additional second after 10 seconds, fetches additional score of one for each second up to a maximum score of ten.

4. Test: - Kraus-Weber Abdominal Strength (Strength of the Upper back muscles).

Objective: - To measure the strength of upper back

Procedure: - The subject must lie down in prone position (belly facing downward) with a pillow under pelvic region and lower abdomen, hand behind the neck. The tester holds feet down and asks the subject to raise head, shoulder and chest. As soon as the subject raises chest, the examiner starts counting time.

Scoring: - Scoring:-The subject is graded fail if he /she cannot hold raised head, shoulder and chest for 10 seconds. Each additional second after 10 seconds, fetches additional score of one for each second up to a maximum score of ten.

5. Test: - Kraus-Weber Abdominal Strength (the strength of lower back).

Objective: - To measure the Strength of Lower Back.

Procedure: - The subject must lie down in prone position (belly facing downward) with a pillow under pelvic region and lower abdomen, hand behind the neck. The tester instead of holding the feet of the subject asks to raise feet keeping feet straight.

Scoring:- As soon as the subject raises his/her feet with knees straight, the examiner start counting seconds. If the subject holds position for 10 seconds, he /she is graded pass otherwise fail. If the subject is able to hold position for more than 10 second, each additional second score one point for the subject up to a maximum of 10 points.

6. Test: - Kraus-Weber Abdominal Strength (the strength of the back and hamstring muscles).

Aim: - To measure the strength of the back and hamstring muscles.

Procedure: - The subject must stand erect in stocking or bare feet with hands at sides, and feet together. The examiner holds knees of the subject and asks him/her to lean down gradually and touch floor with finger tips and hold the position for three seconds.

Scoring:- If the finger tips remain at a distance of 10 or more inches from the floor, the subject is graded as fail while the subject is awarded one point who is able to touch the floor and hold the position for three second is given a score of 10 points. The subject is awarded additional one mark for the downward movement of fingertips per distance of 2 inches (down from the 10" failing or zero point position) for first three scores point and per each distance of one inch till the fingertips touch the ground, the tester counts the time up to 3 seconds and award one points for each second.

## XII. COLLECTION OF DATA

Before collecting the data, the method and procedure of performing each tests was explained and demonstrated to the subjects. The information pertaining to this study were collected by administer the test on the selected variables.

### XIII. STATISTICAL ANALYSIS

For determining the results of the study the researcher used percentage method.

### XIV. ANALYSIS OF DATA AND RESULTS OF THE STUDY

In this chapter of the study the presentation and analysis of data collected was included which can be termed as the heart of the research through textual discussion and tabular and graphic devices, the data are critically analyzed and reported. The tables and figures are used to clarify significant relationships and they are constructed entitled so that they may be self-explanatory.

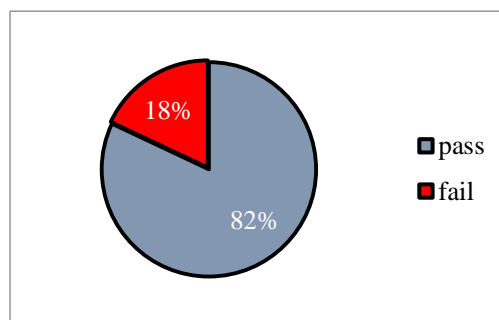
The data was collected and analyzed. The findings with regard to percentage method is presented from Table 1 to table 6 for boys and from table 7 to table 12 for girls on selected variables.

**TABLE-1 (BOYS)**

Total no. of responses	Pass %	Fail %
Total=150	82	18

Strength of Abdominal Plus Psoas Muscles Indicates that 82% subjects carry out the test successfully whereas 18% subjects were not able to do the test.

**Figure: 1**



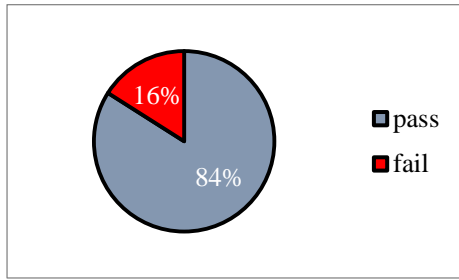
Graphical Presentation of Table-1.

**TABLE- 2 (BOYS)**

Total no. of responses	Pass %	Fail %
Total=150	84	16

Strength of Abdominal Plus Psoas Muscles And Strength of Abdominal Minus Psoas Muscles. Indicates that 84% subjects carry out the test successfully whereas 16% subjects were not able to do the test.

**Figure: 2**



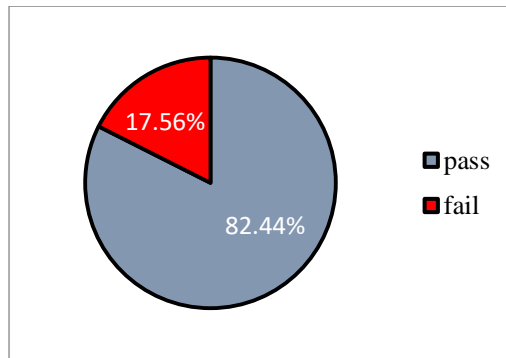
Graphical Presentation of Table-2.

**TABLE -3 (BOYS)**

Total no. of responses	Pass %	Fail %
Total=150	82.44	17.56

Strength of Abdominal Plus Psoas Muscles, Strength of Abdominal Minus Psoas Muscles and Strength of Psoas and Lower Abdominal Muscles Indicates that 82.44% subjects carry out the test successfully whereas 17.56% subjects were not able to do the test.

**Figure: 3**



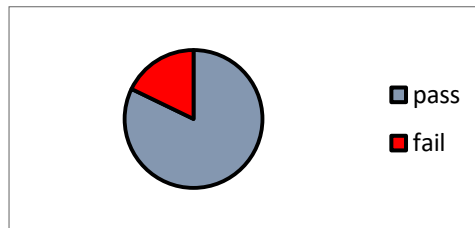
Graphical Presentation of Table-3.

**TABLE -4 (BOYS)**

Total no. of responses	Pass %	Fail %
Total=150	82.17	17.83

Strength of Abdominal Plus Psoas Muscles, Strength of Abdominal Minus Psoas Muscles, Strength of Psoas and Lower Abdominal Muscles and Strength of Upper Back Muscles indicates that 82.17% subjects carry out the test successfully whereas 17.83% subjects were not able to do the test.

**Figure: 4**

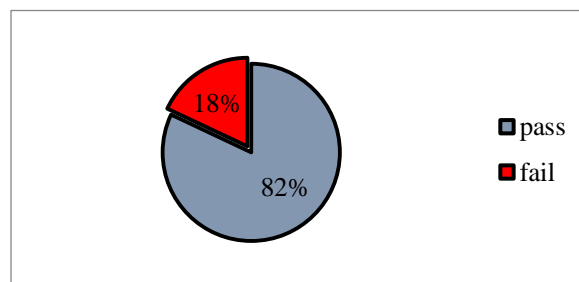


Graphical Presentation of Table-4.

**TABLE -5 (BOYS)**

Total no. of responses	Pass %	Fail %
Total=150	82	18

Strength of Abdominal Plus Psoas Muscles, Strength of Abdominal Minus Psoas Muscles, Strength of Psoas and Lower Abdominal Muscles Strength of Upper Back Muscles and Strength of Lower Back Muscles. Indicates that 82% subjects carry out the test successfully whereas 18% subjects were not able to do the test.

**Figure: 5**

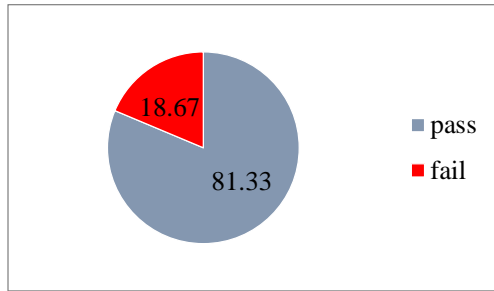
Graphical Presentation of Table-5.

**TABLE -6 (BOYS)**

Total no. of responses	Pass %	Fail %
Total=150	81.33	18.67

Kraus Weber Test of Six Items Indicates that 81.33% subjects carry out the test successfully whereas 18.67% subjects were not able to do the test.

**Figure: 6**



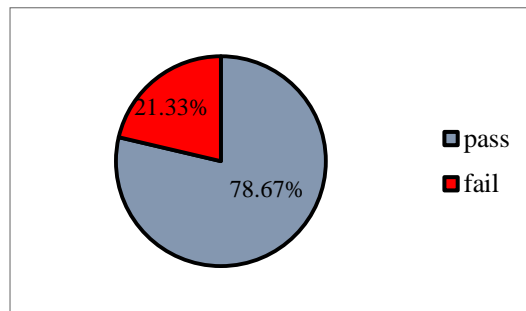
Graphical Presentations of Table-6.

**TABLE –7 (GIRLS)**

Total no. of responses	Pass %	Fail %
Total=150	78.67	21.33

Strength of Abdominal Plus Psoas Muscles Indicates that 78.67% subjects carry out the test successfully whereas 21.33% subjects were not able to do the test.

**Figure: 7**



Graphical Presentations of Table-7.

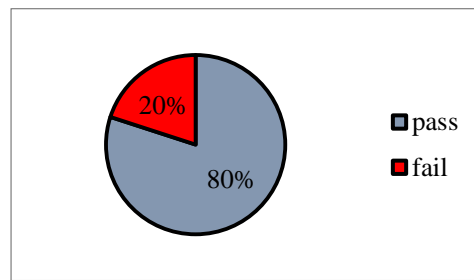
**TABLE -8 (GIRLS)**

Total no. of responses	Pass %	Fail %
Total=150	80	20

Strength of Abdominal Plus Psoas Muscles And Strength of Abdominal Minus Psoas Muscles Indicates that 80% subjects carry out the test successfully whereas 20% subjects were not able to do the test.

**Figure: 8**



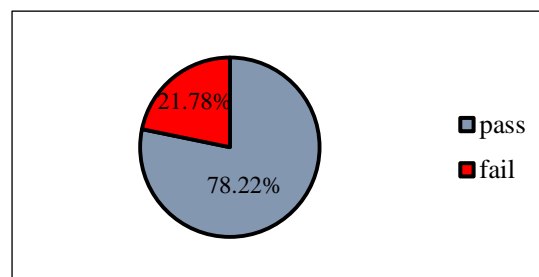


Graphical Presentation Table-8.

**TABLE -9 (GIRLS)**

Total no. of responses	Pass %	Fail %
Total=150	78.22	21.78

Strength of Abdominal Plus Psoas Muscles, Strength of Abdominal Minus Psoas Muscles and Strength of Psoas and Lower Abdominal Muscles Indicates that 78.22% subjects perform the test successfully whereas 21.78% subjects were not able to perform the test.

**Figure: 9**

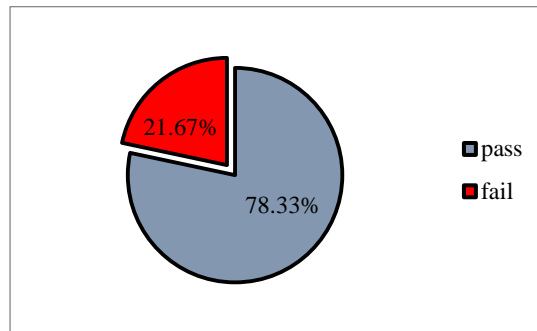
Graphical Presentation of Table-9

**TABLE -10 (GIRLS)**

Total no. of responses	Pass %	Fail %
Total=150	78.33	21.67

Strength of Abdominal Plus Psoas Muscles, Strength of Abdominal Minus Psoas Muscles, Strength of Psoas and Lower Abdominal Muscles and Strength of Upper Back Muscles. Indicates that 78.33% subjects carry out the test successfully whereas 21.67% subjects were not able to do the test.

**Figure: 10**

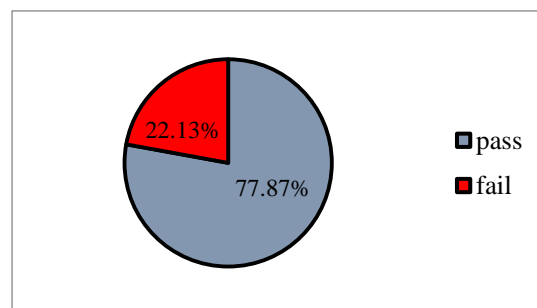


Graphical Presentation of Table-10.

**TABLE -11 (GIRLS)**

Total no. of responses	Pass %	Fail %
Total=150	77.87	22.13

Strength of Abdominal Plus Psoas Muscles, Strength of Abdominal Minus Psoas Muscles, Strength of Psoas and Lower Abdominal Muscles Strength of Upper Back Muscles and Strength of Lower Back Muscles. Indicates that 77.87% subjects carry out the test successfully whereas 22.13% subjects were not able to do the test.

**Figure: 11**

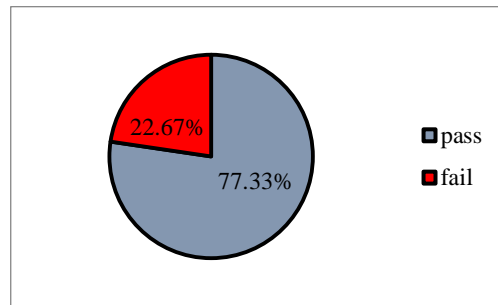
Graphical Presentation of Table-11.

**TABLE -12 (GIRLS)**

Total no. of responses	Pass %	Fail %
Total=150	77.33	22.67

Kraus Weber Test of Six Items Indicates that 77.33% subjects carry out the test successfully whereas 22.67% subjects were not able to do the test.

**Figure: 12**



Graphical Presentation of Table-12

## CONCLUSION

Within the limits and limitation of the present study and on the basis of obtained results, the following conclusions have been drawn.

After conducting an assessment the researcher come to the conclusion that the muscular strength of school children (adolescent) was good, because maximum percentage of students had passed all the six items of Kraus Weber test.

## Acknowledgment

This piece of study work briefly shows the minimum muscular fitness of children in Imphal East district, Manipur. For this survey work, Kraus weber test was done. This test consists of 6 items, which indicate the level of muscular strength and flexibility of Key-muscles group. The researcher found that maximum subject pass the test and minimum was fail.

Maximum subject was pass, reason behind may be more and more involvement in sports activity. The work was done with the intention for knowing the muscular fitness in our society. This research work will provide awareness regarding the importance of muscular fitness to those school authorities and children where the survey has been conducted.

The research worker not only conducted an assessment work but also give lecture on importance of physical fitness .The research worker suggest the school authority to provide more and more fitness to both boys and girls.

## Declarations

The manuscript has not been submitted in any other journal or conference.

## Conflicts of Interest

There are no conflicts to declare.

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## References

- [1] Augustsson, S. R. (2009). Strength training for physical performance and injury prevention in sports.
- [2] Scammacca, N., Roberts, G., Vaughn, S., Edmonds, M., Wexler, J., Reutebuch, C. K., & Torgesen, J. K. (2007). Interventions for adolescent struggling readers: A meta-analysis with implications for practice. *Center on Instruction*.
- [3] Tomik, R. (2007). School sports clubs members' attitudes towards physical education and sport. *Journal of Human Kinetics, 17*, 89.
- [4] Faigenbaum, A. D., Milliken, L. A., & Westcott, W. L. (2003). Maximal strength testing in healthy children. *The Journal of Strength & Conditioning Research, 17*(1), 162-166.
- [5] Faigenbaum, A. D., Milliken, L., Moulton, L., & Westcott, W. L. (2005). Early muscular fitness adaptations in children in response to two different resistance training regimens. *Pediatric Exercise Science, 17*(3), 237-248.
- [6] Gupta, R., Sharma, A., & Sharma, S. (2015). *Professional Preparation and Curriculum Design in Physical Education and Sports Science*. Friends Publications (India).
- [7] Kulkarni, S. D., Desai, H. R., Sharma, C. S., & Bhatt, P. J. (2010). Assessment of muscular fitness in school children using Kraus–Weber tests. *National Journal of Integrated Research in Medicine, 1*(4), 30-5.
- [8] Rawat, V., Rajesh, S. K., & Nagarathna, R. (2014). Minimum muscular fitness and ventilatory function in south Indian school children. *Journal of Exercise Science and Physiotherapy, 10*(2), 104.
- [9] Prasad, S. (2013). A survey of minimum muscular strength on school children in Pune district. *International Journal of Management, Economics and Social Sciences, 2*(2).



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