



CORRELATION BETWEEN BODY COMPOSITION AND FLEXIBILITY IN HOMEBOUND ADOLESCENTS

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ABSTRACT Changes in body composition hold significance due to their potential impact on engagement and performance in sports, particularly in activities where weight and center of gravity play a crucial role, such as gymnastics, diving, figure skating, and wrestling. The period of puberty introduces substantial changes that may influence a child's ability to participate in sports. Objective: The study aimed to assess the relationship between Body composition and Flexibility in homebound adolescents of Uttar Pradesh. Hypothesis: The researcher postulated a null hypothesis suggesting that there may be no relationship between Body composition and Flexibility of homebound adolescents in Uttar Pradesh. Materials & Methods: Participants for the study were selected from the Agra district, with a total of 50 teenagers (25 males and 25 females) recruited. The researcher opted for body composition (body fat percentage) and flexibility, considering feasibility criteria. Statistical Technique: Descriptive statistics and the Pearson product-moment correlation were employed using SPSS version-22 to test the hypothesis, with the significance threshold set at 0.05. Results and Discussion: The study's findings revealed a minimal association between body composition and flexibility in 50 homebound adolescents from Uttar Pradesh (25 males and 25 females). The statistical analysis showed a weak and statistically insignificant association between body composition and flexibility in males ($r=.332$, $p=.105$). Similarly, the relationship between body composition & flexibility of females was negative but insignificant ($r= -.054$, $p=.799$). Discussion of the Hypothesis: The formulated hypothesis is accepted, as the results demonstrate an insignificant correlation between body composition and flexibility in both boys and girls. Conclusion: Considering the study's limitations and results, it is concluded that Body composition and Flexibility were not found significant in the case of both boys and girls.

KEYWORDS : Body composition, Flexibility, homebound adolescents, Fat Percentage.

1. INTRODUCTION

The interplay in Body composition versus flexibility is a dynamic and multifaceted aspect that significantly influences an individual's overall health and athletic performance.

Body Composition Overview: It can be said to be the proportion of various tissues like Muscles, Bone, and fat inside the body. Understanding the distribution of these components is crucial for assessing overall health and well-being. This article explores the physiological changes in body composition, particularly during growth phases like puberty, and their implications for flexibility.

Flexibility: A Crucial Athletic Element: Flexibility, the range of motion around joints, is paramount in various sports and physical activities. We explore how the flexibility of tendons, muscles, and ligaments plays a pivotal role in athletic performance, emphasizing its significance in activities where weight distribution and center of gravity are critical.

Impact of Puberty on Body Composition and Flexibility: Puberty introduces significant changes in body composition and flexibility. We examine how the rapid growth of bones can outpace the development of tendons and muscles, impacting flexibility. Additionally, we discuss the hormonal changes, especially the surge in estrogen, that can influence flexibility differently in males and females during and after puberty.

Sports Selection and High Flexibility: Individuals with high flexibility may find it easier to excel in specific sports. We discuss the self-selection of athletes into activities like figure skating, Kho-Kho, kabaddi, Gymnastics, Taekwondo, Karate, Pencak Silat, Mallakhamba based on their flexibility. Practical insights are provided for parents and coaches observing children's physical development during puberty.

Age-Specific Body Composition Guidelines: We delve into age-specific recommendations for Body fat percentages described by the American Journal of Clinical Nutrition. Understanding these guidelines allows readers to appreciate the variations in body composition that naturally occur as individuals age and how they can impact flexibility and overall health.

1.2 Study Objective:

This research aimed to assess the correlation between body composition and flexibility among adolescents confined to their homes

in Uttar Pradesh.

1.3 Hypothesis:

The researcher proposed a null hypothesis suggesting that there may be no association between Body fat Percentage and flexibility of homebound adolescents from Uttar Pradesh.

2.1 Materials & Methods:

Participants for this study were selected from the Agra district, a total 50 teenagers (25 males and 25 females).

2.2 Variable Selection:

Considering feasibility criteria, the researcher opted for body composition (measured by body fat percentage) and flexibility as the variables of interest.

2.4 Data Reliability:

The reliability of data was ensured by assessing the instrument's dependability, the tester's competence, the test's reliability, and the participants' reliability.

Instrument Reliability: All instruments and equipment were sourced from the physical education department laboratory at Banaras Hindu University. These were provided by reputable standard organizations and firms serving the needs of numerous research facilities in India and globally.

2.5 Test Administration:

All participants at Raja Balwant Singh Inter College Bichpuri Campus, Agra, were briefed on the assessment goals and requirements for evaluating body composition and flexibility.

2.5.i Body Composition Estimation:

The assessment of body composition involved determining both fat and lean body weights. The percentage of body fat was computed using Durnin and Rahaman's ready reckoner³, based on the total value of skinfolds at four locations (biceps, triceps, subscapular, and suprailiac).

2.5.ii Flexibility Estimation:

Hip and back flexibility, along with hamstring muscle extension, were measured from Sit & Reach test. Results were collected in centimeters.

2.6 Statistical Technique:

Descriptive statistics and the Pearson product-moment correlation

were computed using SPSS version 22 to test the hypothesis. The significance threshold was set at 0.05

Results and Data Analysis: The data about body composition and flexibility in homebound adolescents from Uttar Pradesh underwent analysis using Descriptive Statistics & Pearson's product moment method of correlation. Tables 1-10 provide detailed statistics on the findings of the student analysis.

Table-1 Descriptive statistics of Body composition and Flexibility in homebound adolescent Boys of Uttar Pradesh

DESCRIPTIVE STATISTICS	BODY COMPOSITION	FLEXIBILITY
Mean	25.22	29.37
Standard Error	0.61	0.89
Standard Deviation	3.06	4.49

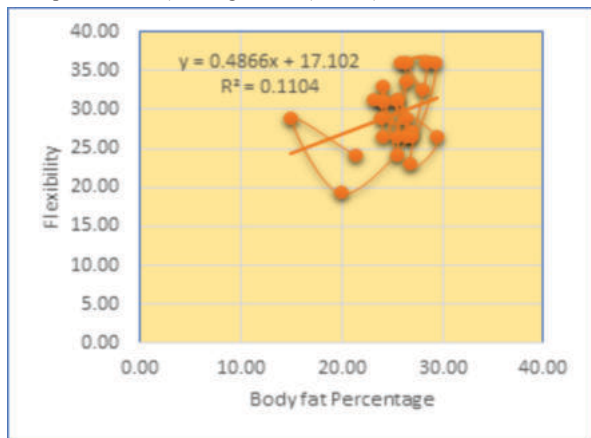
Table 1 represents Mean & Standard Deviation in relation to Body Composition as 25.22±3.06, with a standard error of 0.61. Additionally, the mean and standard deviation of flexibility were 29.37±4.49, with a standard error of 0.89.

Table-2 Correlation between Body composition and Flexibility in homebound adolescent Boys of Uttar Pradesh

		BODY COMPOSITION	FLEXIBILITY
Body_Composition_male	Pearson Correlation	1	.332
	Sig. (2-tailed)		.105
	N	25	25
Flexibility_male	Pearson Correlation	.332	1
	Sig. (2-tailed)	.105	
	N	25	25

***Significant at 0.05 level**

Table 2 reveals that, for homebound adolescent boys in Uttar Pradesh (N=25), the correlation between body composition and flexibility (r=.332, p-value 0.105) is insignificant (P>0.05).



Graph 1- Correlation between Body composition and flexibility of Boys

Table-3 Descriptive statistics of Body composition and Flexibility in homebound adolescent Girls of Uttar Pradesh

DESCRIPTIVE STATISTICS	BODY COMPOSITION	FLEXIBILITY
Mean	29.54	30.92
Standard Error	0.49	0.48
Standard Deviation	2.47	2.42

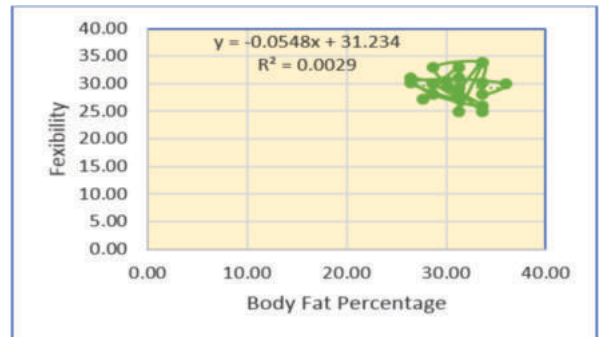
Table 3 displays mean & Standard Deviation (29.54±2.47, standard error 0.49) and flexibility (30.92±2.42, standard error 0.48) for homebound adolescent girls in Uttar Pradesh.

Table-4 Correlation between Body composition and Flexibility in homebound adolescent Girls of Uttar Pradesh

		BODY COMPOSITION	FLEXIBILITY
Body_Composition_female	Pearson Correlation	1	-.054
	Sig. (2-tailed)		.799
	N	25	25
Flexibility_female	Pearson Correlation	-.054	1
	Sig. (2-tailed)	.799	
	N	25	25

***Significant at 0.05 level**

Table 4 indicates, for homebound adolescent girls (N=25), an insignificant correlation (P>.05) between body composition & flexibility (r=-.054, p-value 0.799).



Graph 2- Correlation between Body composition and flexibility of Girls

3.2 DISCUSSION of Findings:

The study aimed to explore the correlation between Body Composition and flexibility of homebound teenagers from Uttar Pradesh. The findings indicate a minimal and statistically insignificant relationship between Body composition & flexibility in Male & Female Adolescents, the correlation coefficients suggest a weak or negligible relationship, aligning with previous research findings.

References to studies by Andreasi V et al., Huijing He et al., Fogelholm et al, Esther Liyanage et al., and Zahra A et al.further support the observation that the link between body composition and flexibility can vary among different age groups and populations.

Chaudhary, Dr. (2019) conducted a study on middle-aged women in Sultanpur District, Uttar Pradesh, revealing no significant relationship between Flexibility & Body Composition. This underscores the diversity of results across different demographic groups.

3.3 Discussion of The Hypothesis:

Based on the study's outcomes, the hypothesis positing an insignificant correlation between body composition and flexibility in homebound adolescents in Uttar Pradesh is accepted. The results affirm the lack of a substantial association between these variables in both boys and girls.

3.4 CONCLUSION:

Considering the study's limitations and results, it can be concluded that an insignificant correlation was found between Body composition & Flexibility of homebound adolescents, encompassing both boys and girls.

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