



EFFECT OF CONVENTIONAL EXERCISES ON MUSCULAR STRENGTH, MUSCULAR ENDURANCE, AND FLEXIBILITY AMONG UNIVERSITY STUDENTS

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ABSTRACT

This study investigates the impact of traditional exercises namely, Dand-Baithak, Mallakhamba, Kushti, and Running exercises on selected physical fitness components among male university students aged 17 to 25 at DAV University, Jalandhar, Punjab, India. A sample of 45 participants engaged in a sixteen-week regimen of traditional exercises including Dund, Baithak, Mallakhamb, Kushti, and running. The study aimed to evaluate improvements in, flexibility, muscular endurance and muscular strength. Pre- and post-intervention assessments were conducted using standard fitness tests. Results pretended significant improvements in, flexibility, muscular endurance, and muscular strength, as evidenced by paired samples t-tests and maintained normal data distribution.

These findings highlight the comprehensive benefits of traditional exercises in enhancing various physical fitness components.

Keywords: Conventional exercises, physical fitness, Dand-Baithak, Mallakhamba, flexibility, muscular endurance, muscular strength, university students.

INTRODUCTION

Physical fitness plays a pivotal role in individuals' overall health and well-being, particularly among university students at a crucial stage of their physical and mental development. Conventional or traditional exercises, deeply rooted in Bhartiya culture, offer a unique and effective means to enhance various fitness components. This study focuses on the impact of traditional exercises on the fitness components among male university students aged 17 to 25 at DAV University, Jalandhar, Punjab, India. Conventional exercises, such as Dund, Baithak, Mallakhamb, Kushti, and running are renowned for their comprehensive approach to physical conditioning, providing a holistic approach to fitness by integrating physical and mental health benefits. The primary objective of this study is to evaluate the effects of these conventional exercises on specific physical fitness components, including muscular strength, muscular

endurance, and flexibility. A carefully selected sample of forty-five male students from DAV University participated in this research, with the training regimen spanning sixteen weeks and comprising three sessions per week. This rigorous training schedule aims to ensure significant improvements in the targeted fitness components, providing valuable insights into the efficacy of conventional exercises in enhancing physical fitness among university students.

METHODOLOGY

The subject involved, 45 male university students, aged between 17 to 25 years, from DAV University, Jalandhar, Punjab, India. The participants were purposefully selected based on their availability and willingness to engage in the exercise regimen. This experimental study has been conducted over sixteen weeks. Participants were engaged in different traditional exercise routines. The training sessions were held three days a week, ensuring consistent and structured exercise regimens. Participants performed Bhartiya traditional exercises including Dund, Baithak, Mallakhamb, Kushti, and running distances of 2 to 5 kilometers. These exercises were chosen for their historical significance and comprehensive impact on physical fitness.

The physical fitness components, which include muscular strength, muscular endurance, and flexibility, were measured using standard fitness tests before and after the intervention period. Muscular Strength is Assessed through a pull-up test, Muscular Endurance is Evaluated by a bent knee sit-up test, and Flexibility is Measured using sit-and-reach tests.

STATISTICAL ANALYSIS

The results of this study are presented in the following sections, detailing the impact of traditional exercises on various physical fitness components. Data were collected and analyzed from pre- and post-intervention assessments, offering insights into the efficacy of the training regimen implemented over the sixteen weeks.

1. Traditional Exercise and Flexibility

1.1 Test of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Flexibility_Pre	.984	45	.799
Flexibility_Post	.976	45	.469

Table 1.1 The Shapiro-Wilk test results statistics

The Shapiro-Wilk test results for flexibility scores indicate normal distribution for both pre-and post-intervention data. Pre-intervention, the Shapiro-Wilk statistic is 0.984 (df = 45, Sig. = 0.799), and post-intervention, it is 0.976 (df = 45, Sig. = 0.469). Both significance levels are above 0.05, meaning there is no significant deviation from normal distribution.

1.2 Descriptive Analysis

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Flexibility_Pre	33.7022	45	5.59799	.83450
	Flexibility_Post	38.4000	45	4.95044	.73797

Table 1.2 Paired Samples Statistics

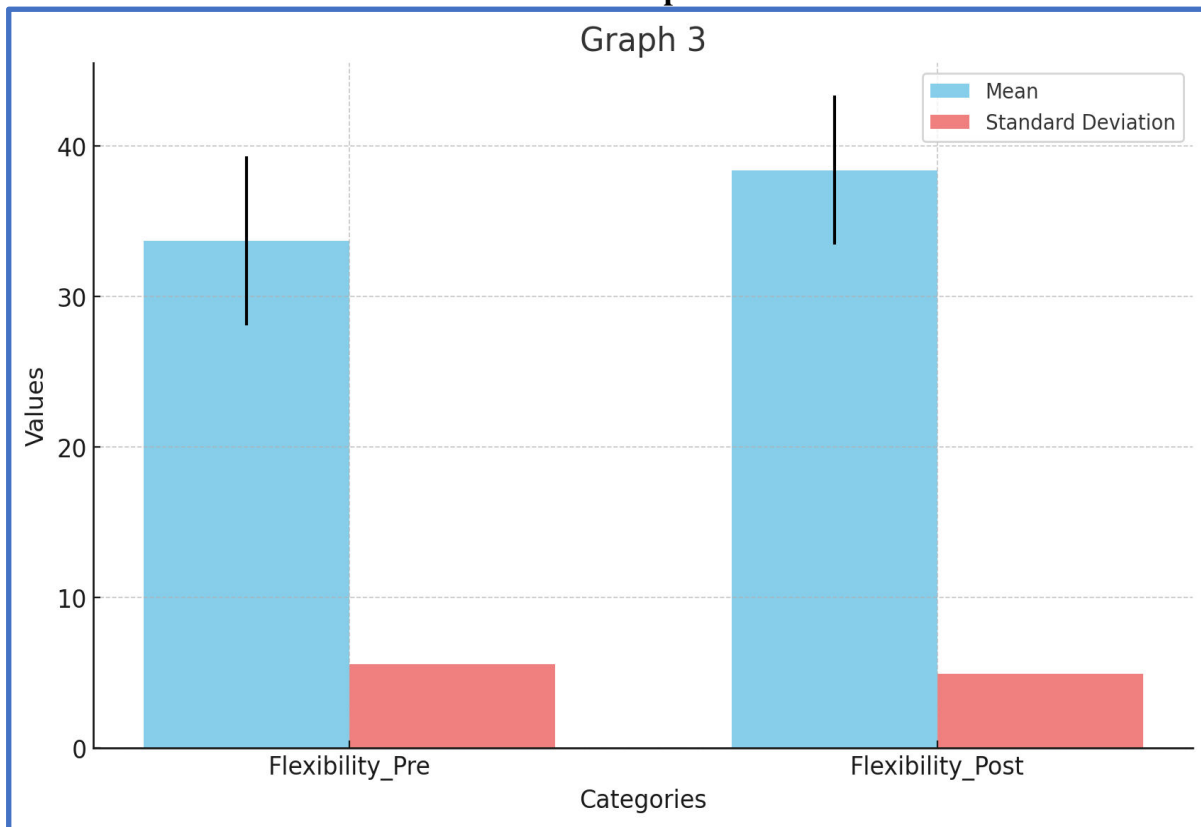


Figure 1.2 Graphical representation of Flexibility Pre and Post-test mean score

The analysis of paired samples statistics shows an increase in mean flexibility scores from 33.7022 pre-intervention to 38.4000 post-intervention. The standard deviation decreased from 5.59799 to 4.95044, indicating reduced variability and suggesting a potential homogenization effect. The standard error of the mean also improved from 0.83450 to 0.73797, indicating higher precision post-intervention

1.3 Test of Comparison

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
Flexibility_Pre - Flexibility_Post	-4.69778	1.41526	.21097	-22.267	44	.000

Table 1.3 Flexibility Pre- and post-Score Paired Differences

The paired differences statistics reveal a mean difference of -4.69778 in flexibility scores, indicating an average improvement of approximately 4.7 units post-intervention. The standard deviation of 1.41526 suggests consistent differences across participants, and the standard error mean of 0.21097 indicates high precision. The t-statistic of -22.267 (df = 44) and a p-value of 0.000 demonstrate that the improvement in flexibility is statistically significant, strongly supporting the positive effect of the traditional exercise intervention.

2. Traditional Exercise and Muscular Endurance

2.1 Test of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Pre Muscular Endurance	.964	45	.166
Post Muscular Endurance	.965	45	.188

Table 2.1 The Shapiro-Wilk test results statistics

The Shapiro-Wilk test assessed the normality of muscular endurance scores before and after the intervention. Pre-intervention scores had a Shapiro-Wilk statistic of 0.964 (Sig. = 0.166) and post-intervention scores had a statistic of 0.965 (Sig. = 0.188), both with a sample size of 45. The significance levels are above 0.05, indicating no significant deviation from normal distribution.

2.2 Descriptive Analysis

	Mean	N	Std. Deviation	Std. Error Mean
Pre-Muscular Endurance	46.27	45	9.213	1.373
Post Muscular Endurance	52.60	45	8.907	1.328

Table 2.2 Paired Samples Statistics

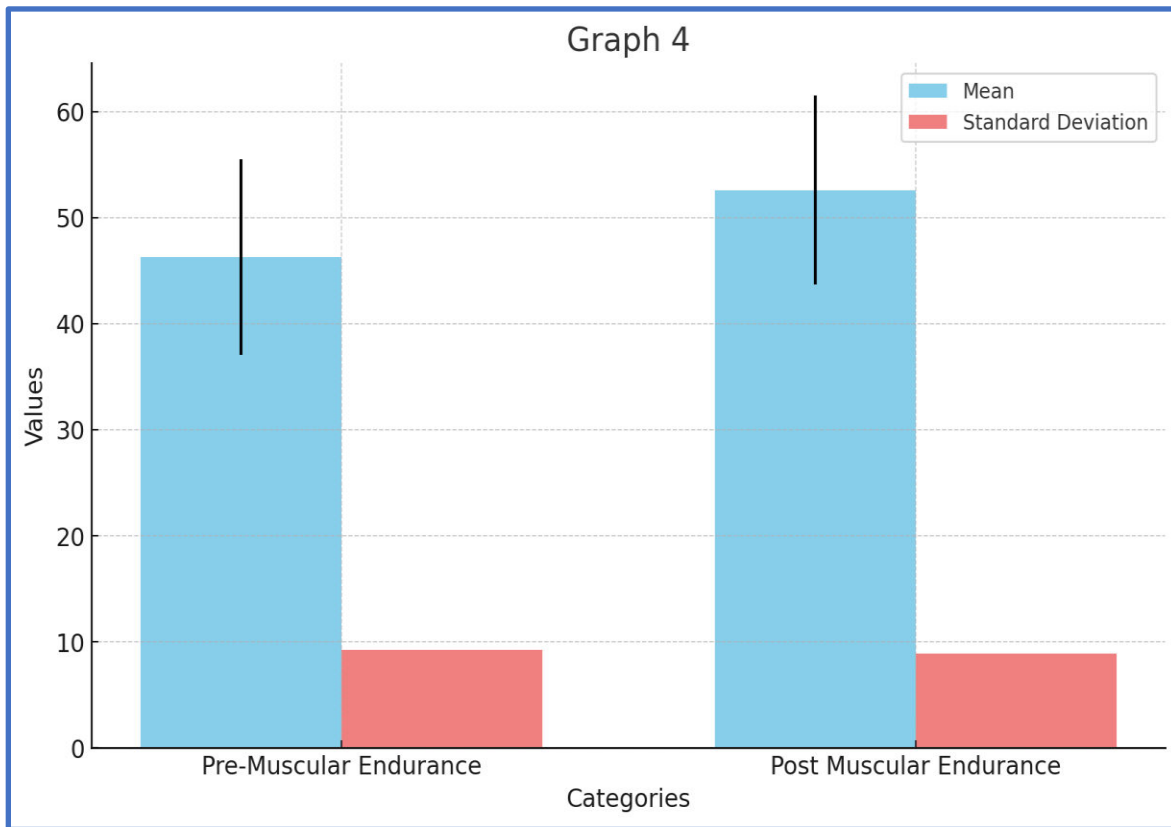


Figure 2.2 Graphical representation of Muscular Endurance Pre and Post-test mean score

The paired samples statistics reveal an increase in mean muscular endurance scores from 46.27 pre-intervention to 52.60 post-intervention, across 45 participants. The pre-intervention standard deviation was 9.213 (SE = 1.373) and the post-intervention standard deviation was 8.907 (SE = 1.328). The slight decrease in standard deviation post-intervention suggests reduced variability.

2.3 Test of Comparison

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
Pre-Muscular Endurance - Post-Muscular Endurance	-6.333	1.279	.191	-33.212	44	.000

Table 2.3 Muscular Endurance Pre- and post-Score Paired Differences

The paired differences analysis shows a mean difference of -6.333 in muscular endurance scores, indicating an average increase post-intervention. The standard deviation of differences is 1.279, with a standard error of 0.191. The t-statistic is -33.212 (df = 44), with a p-value of 0.000, signifying a statistically significant improvement in muscular endurance.

3 Traditional Exercise and Muscular Strength

3.1 Test of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Pre-Muscular Strength	.954	45	.071
Post-Muscular Strength	.957	45	.093

Table 3.1 The Shapiro-Wilk test results statistics

The Shapiro-Wilk test assessed the normality of pre- and post-muscular strength data. Pre-intervention measurements had a statistic of 0.954 (Sig. = 0.071), and post-intervention measurements had a statistic of 0.957 (Sig. = 0.093). Both significance levels were above 0.05, indicating no significant deviation from normality.

3.2 Descriptive Analysis

	Mean	N	Std. Deviation	Std. Error Mean
Pre-Muscular Strength	8.58	45	2.888	.431
Post Muscular Strength	10.84	45	2.931	.437

Table 3.2 Paired Samples Statistics

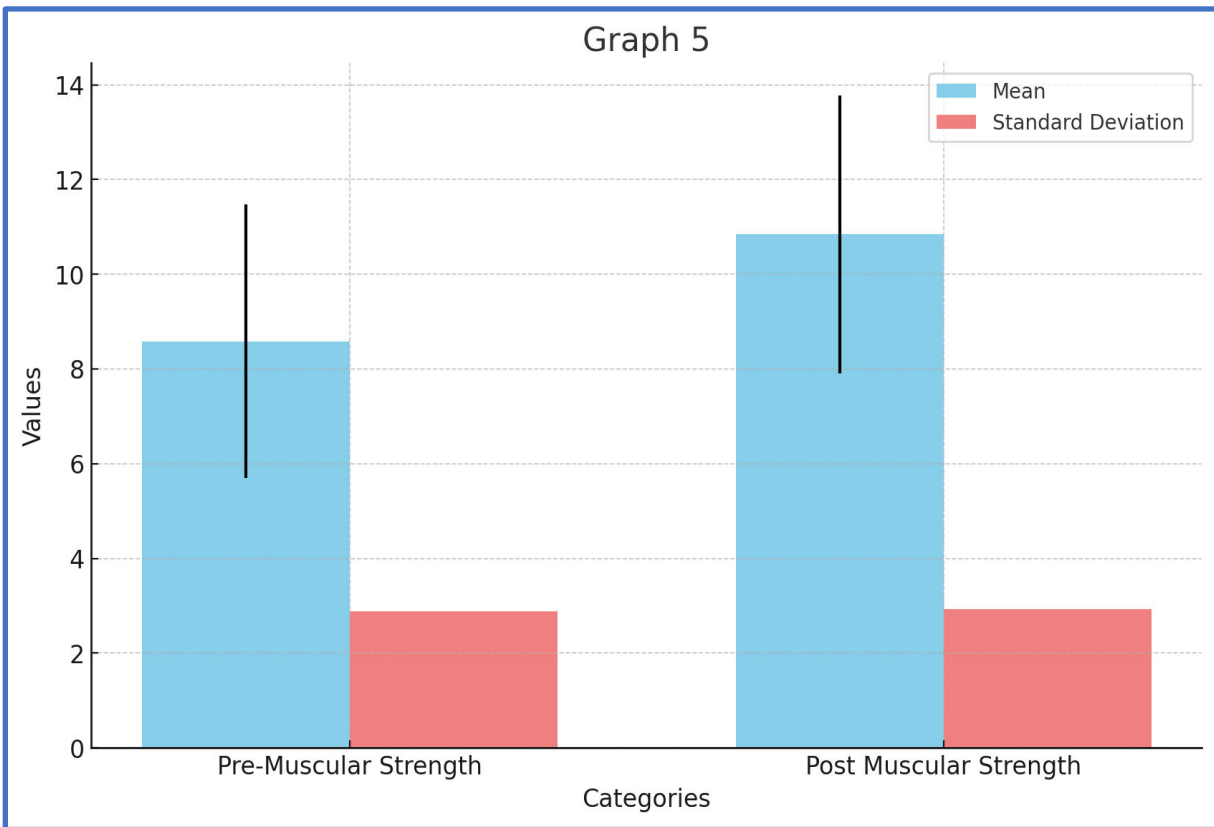


Figure 3.2 Graphical representation of Muscular Strength Pre and Post-test mean score

The paired samples statistics show an increase in mean muscular strength from 8.58 pre-intervention to 10.84 post-intervention, based on 45 participants. The standard deviations are similar (pre: 2.888, post: 2.931), indicating consistent variation. The slight difference in standard errors (pre: 0.431, post: 0.437) suggests precise estimates.

3.3 Test of Comparison

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
Pre-Muscular Strength – Post-Muscular Strength	-2.267	.837	.125	-18.174	44	.000

Table 3.3 Muscular Endurance Pre- and post-Score Paired Differences

The analysis of paired differences shows a mean difference of -2.267 in muscular strength, indicating an average increase of 2.267 units post-intervention. The t-test yielded a t-value of -18.174 (df = 44) with a p-value of 0.000, demonstrating statistical significance (p < 0.001). This confirms the intervention significantly improved muscular strength, not due to random chance, highlighting the intervention's effectiveness.

RESULTS AND DISCUSSION

The results of this study demonstrate the significant impact of traditional exercises on various physical fitness components among participants, following a sixteen-week intervention that

revealed notable improvements in flexibility, muscular endurance, and muscular strength. Statistical analysis indicated a significant post-intervention improvement in Flexibility, as evidenced by a decreased standard deviation suggesting reduced variability and a homogenizing effect, with the paired samples t-test confirming statistical significance. The intervention led to a significant increase in muscular endurance, supported by normal data distribution and a reduction in standard deviation post-intervention, indicating stabilized endurance levels. Muscular strength saw marked improvement, with the paired samples t-test validating the statistical significance of observed changes.

CONCLUSION

The sixteen-week intervention study at DAV University has shown that traditional exercises significantly enhance selected physical fitness components, including flexibility, muscular endurance, and muscular strength among male university students. The statistical analyses confirmed substantial improvements in these areas, supported by the normal distribution of data, ensuring the reliability of the results. The findings underscore the effectiveness of traditional exercises in fostering overall physical fitness, providing a strong case for their inclusion in fitness programs.

RECOMMENDATIONS

Based on the results of this study, recommendations can be made to develop the physical fitness and Mental well-being of university students through the incorporation of traditional exercises and yogic practices.

Institutions should develop comprehensive wellness programs that combine both traditional exercises and yogic practices. These programs should aim to balance physical fitness with mental well-being, addressing the multifaceted health needs of students. Wellness programs could include sessions on nutrition, mental health counseling, and stress management techniques alongside physical exercise classes.

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