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Impact Of Pilates And Plank Variations On Total Cholesterol Of Adolescent School Boys In Andhra Pradesh Act

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ABSTRACT

Introduction: With the rising prevalence of sedentary lifestyles and unhealthy dietary habits among adolescents, there is a growing concern regarding cardiovascular health. Pilates and plank exercises have been recognized for their potential to improve cardiovascular fitness, but their specific impact on total cholesterol levels among adolescent school boys remains underexplored, particularly in the context in of Schools in Andhra Pradesh.

Methods: Schoolboys in Andhra Pradesh, India, from the ages of twelve to sixteen, participated in a randomized controlled experiment. The participants were divided into three groups: one that would get Pilate's instruction, another that would receive plank variations instruction, and a control group. For twelve weeks, the interventions were carried out three times weekly. Using established protocols, total cholesterol levels were assessed both before and after the intervention. Findings: The control group had significantly higher total cholesterol levels than the Pilates and plank variations intervention groups, according to preliminary analysis ($p < 0.05$). Changes in total cholesterol levels may be better understood by subgroup analysis depending on how long people practiced and how strictly they followed the intervention program.

1 INTRODUCTION

A heart attack is a potentially fatal cardiovascular event that affects people all over the globe. Although it is known that factors like smoking and eating a lot of fat increase the risk, it is critical to find ways to avoid this dangerous disorder, particularly in younger generations. One of the most important things that schools can do to prevent cardiac problems is to include physical activity into the curriculum and encourage students to exercise regularly. They can also provide information about how physical activity benefits health. As a matter of fact, regular exercise has recently been recognised as effective method forwarding against cardiovascular disorders and heart attacks. Impact of Pilates and Plank Exercises on Leg Strength of Adolescent School Boys, Aged 14–16, is the focus of the researcher's present project, which builds on past work on many parameters. The results of this randomised control group research on the benefits of these workouts on the strength of this age group's legs are encouraging... (**Kondalarao, D., & Rani, K. U. (2022).** This treatment is designed to prevent and alleviate heart-related disorders. A cure for illness prevention is exercise. A middle-aged man's fitness level and immune cell activity were examined in a research that followed an elbow plank workout routine for four weeks. Among the many measures of physical fitness that the plank exercise enhanced were flexibility, cardiovascular fitness, strength, and endurance in the muscles. Muscle gain and fat loss were two other beneficial changes in body composition that resulted from it. Nevertheless, the research did discover that cytotoxicity and reductions in certain lymphocyte subsets had adverse effects on immune cell function. Although doing elbow planks may improve fitness, the effects on immune cell function may need more investigation in light of these results. **(Park, S.-K., Lee, K.-S., Heo, S.-J., & Jee, Y.-S., 2021).** This research looked at how a combination of strength and endurance training affected biomarkers and physical performance in a group of overweight, inactive young women. Over the course

of nine weeks, individuals trained three times per week for strength and endurance. There were no notable changes to body composition or eating habits, but there was an 8.5% increase in estimated maximum oxygen uptake, considerable gains in muscular strength, decreased total cholesterol, and increased high-density lipoprotein. This study's results provide further evidence that young women may improve their fitness and health with only a short course of combination training. **(Kyrolainen, H., Hackney, A. C., Salminen, R., Repola, J., & Häkkinen, K.,2018).** The possible effects of limited energy availability (LEA) on several parts of women's health are illuminated by this study. Women at risk of LEA had much reduced energy availability and calcium consumption compared to non-risk women, according to the research. Furthermore, their T3 levels were lower, which may have consequences for their general health, especially their bone health. These results underline the hazards connected with limited energy availability and the significance of active people consuming enough calories and nutrients. **(Black, K., Slater, J., Brown, R. C., & Cooke, R.,2018).** How aerobic exercise affects cholesterol in children was the focus of this study. The good news is that it increased fitness and decreased body fat without significantly lowering non-HDL-C. The study's focus on novel indicators of cardiovascular health in young people makes it significant. Exercising for longer periods and with more intensity requires more study. In general, physical activity is beneficial to children's health. **(Tolfrey, K., 2009).** The purpose of this study was to determine whether or not 25 high school students (ranging in age from 14 to 17) improved their total cholesterol (TC) and high-density lipoprotein cholesterol (HDL-C) levels after participating in an aerobic exercise program for 15 weeks. Four days a week, fourteen children in the experimental group worked out in a specialised PE class, whereas eleven students in the control group participated in the usual PE curriculum. There were statistically significant shifts in TC and HDL-C values, indicating that the aerobic exercise program had a beneficial impact. **(Rimmer, J. H., & Looney, M. A.,1997).** The effect of recreational physical exercise on HDL-C levels in young adults and adolescents was the focus of this study. Even after accounting for confounding variables such as BMI, insulin, and triglyceride concentrations, the research indicated that young men whose physical activity levels were greater also had HDL-C levels that were higher. It seems from the data that regular exercise boosts HDL-C levels in this group. **(Raitakari, O. T., Taimela, S., Porkka, K. V., &Viikari, J. S.,1996).** This research looked at the effects on 54 young men's blood lipoproteins and lipids following 12 weeks of supervised exercise. By the conclusion of the training session, the subjects had considerably increased their maximal oxygen absorption and running distance. **(Horby-Petersen, J., Grande, P., & Christiansen, C., 1982)**.

RESEARCH METHODS

The effects of HIIT on the aerobic capacity and lipid profiles of young males were studied. Using anthropometrics and blood lipid measurements as part of comprehensive pre- and post-training evaluations, a well-structured 8-week training program was implemented. A Bonferroni correction was used as part of the study's statistical rigour to ensure that mistakes were controlled. Musa, Adeniran, Dikko, and Sayers (2009) conducted a thorough and methodical investigation of the study issue. **Subject Selection:** Finding out how Pilates and Plank affected the overall cholesterol levels of high school boys was the main goal of the research. In order to do this, 45 male students from Zilla Parishad High School in Dirisavancha, Prakasam, were chosen at random to participate. This study's volunteers were between the ages of thirteen and fifteen. **Parameters Selection:** The dependent variable in this study is total cholesterol, whereas the independent factors are Pilates and plank exercises. **Experimental Design:** An experiment based on random sampling was used to design the research. A total of thirty-five students (n=15) were randomly assigned to one of three groups. Group III served as a control, and Groups I and II were used as experimental groups. Pilate's exercises were performed by Experimental Group I (PIEG), whilst the chosen plank exercises were performed by Experimental Group II (PLEG). Twelve weeks of five-day-a-week, fifty-minute training sessions were conducted with the experimental groups. Beyond their regular duties, members of the control group (CG) did not partake in any extracurricular activities.**Scoring:** A clinical chemistry analyzer (Erba Mannheim chem 5X) was used to assess total cholesterol in milligrammes per deciliter (mg/dl) before and after the test. To find out if there were any notable improvements; statisticians used t-tests and Analysis of Covariance (ANCOVA). The paired mean differences were identified using Schaffer's post hoc test, which was used due to the substantial findings. The significance threshold that was used was 0.05.

RESULTS

TABLE - I

EXAMINING THE PRE AND POST TEST CHOLESTEROL DATA OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP VIA VARIANCE ANALYSIS

	PIEG	PLEG	CONT Group	SOV	Sum of Squires	df	Mean Squire	F ratio
Pre-test Mean	171.46	178.60	175.60	B	384.84	2	192.42	0.31
SD	32.48	21.19	17.74	W	25470.93	42	606.45	
Post-test Mean	146.73	133.13	175.0	B	13683.91	2	6841.95	14.91
SD	24.47	22.04	17.06	W	19264.66	42	458.68	
Adjusted Post-test Mean	149.74	130.42	174.69	B	14751.55	2	7375.77	103.95
				W	2908.95	41	70.95	

Significant at 0.05 Level

With 2 degrees of freedom and a significance level of 0.05, the necessary table value is 3.22.

Table I shows that the means before testing were 171.46, 178.60, and 175.60 for the Pilates group (I), the plank group (II), and the control group (III), respectively. No statistically significant difference between the pre-test averages was found when the resultant 'F' ratio of 0.31 was lower than the critical table value of 3.22 at the 0.05 level of confidence and 2 degrees of freedom. By comparing the groups' cholesterol levels prior to medication initiation, it is clear that there is no statistically significant difference.

The Pilates group finished the program at an average of 146.73, whereas the plank group averaged 133.13, and the control group averaged 175.0. At the 0.05 level of confidence and with 2 and 42 degrees of freedom, the resulting 'F' ratio of 14.91 is more than the critical table value of 3.22, suggesting a statistically significant difference between the groups with respect to the post-test averages. There was an average of 149.74 for Group I (Pilates), 130.42 for Group II (Planks), and 174.69 for Group III (control) when post-test variables were taken into account. The resultant 'F' ratio of 103.95, which is more than the critical table value of 3.22 at a 0.05 level of confidence and with 2 and 41 degrees of freedom, indicates a significant difference among the groups in terms of adjusted post-test averages. According to the corrected post-test averages, there is a significant difference between the three groups: control (III), Pilates (I), and Plank (II). For the last step, we check for statistical significance between the matched means using Schaffer's post hoc test.

TABLE – I (a)

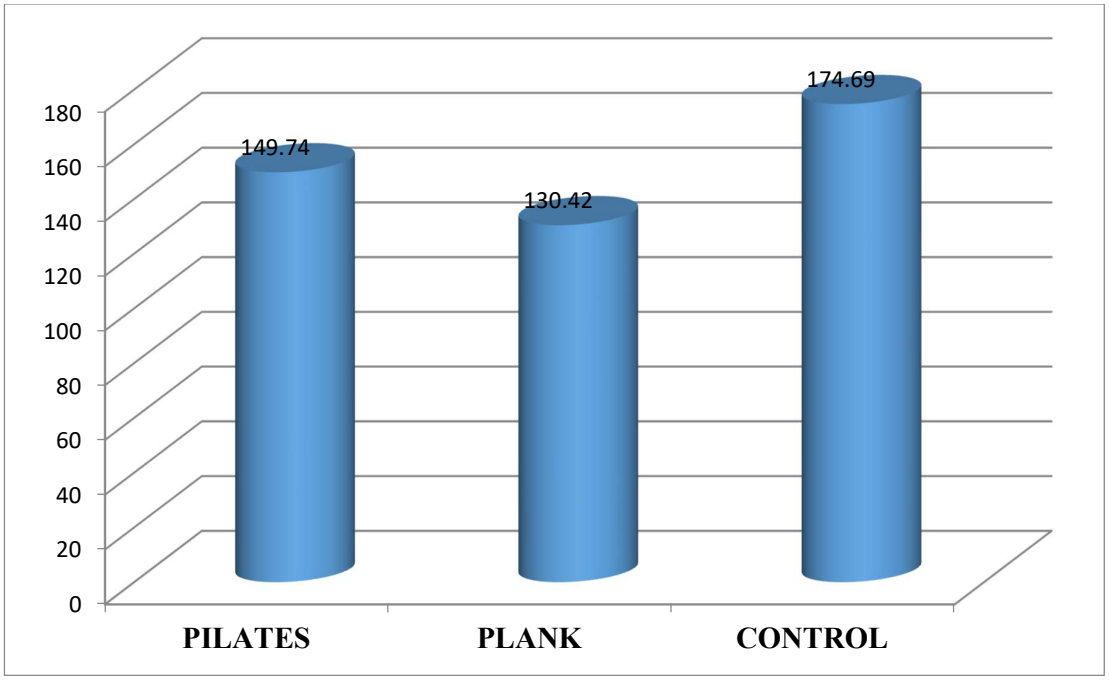
EVALUATION OF SCHEFF'S POST-HOC TOTAL CHOLESTEROL ANALYSIS VIA PAIRED MEANS

PILATES	PLANK	CONTROL	MEAN DIFFERENCES	CI
149.74	130.42		19.32	7.40
149.74		174.69	24.95	
	130.42	174.69	44.27	

RESULTS OF TOTAL CHOLESTEROL LEVELS

Following a statistically significant analysis of covariance (Table I (a)), we compared the control group (III), the plank group (II), and the Pilates group (I) using Schaffer's post hoc test to uncover any differences in paired means. On average, each group's corrected total cholesterol values are shown in the table. At the 0.05 level of confidence interval, there was a 19.32 point difference between the Pilates and plank groups. When comparing the two groups, the Pilates group had a 24.95 point improvement, with a confidence interval of 0.05. Everything else being equal, there is a statistically significant difference between the plank and control groups (44.27 at the 0.05 confidence level). According to the results, the plank group outperformed the Pilates and control groups. You can see the differences in the means of the control, Pilates, and plank groups in figure 1.

FIGURE-1
GRAPHICAL REFRESENTATION ON ORDERED ADJUSTED MEANS OF CHOLESTEROL



PILATES (PILATES EXERCISE GROUP), PLANK (PLANK EXERCISE GROUP), CONTROL (CONTROL GROUP)

CONCLUSSION

Results showed that Pilates and plank movements had a favorable impact, leading to statistically significant reductions in certain total cholesterol levels.

Pilates and plank pose workouts significantly reduce total cholesterol, according to the study's results.

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