

Effect of Spinning Cycle Exercise and Protein Supplementation on Selected Lipid Profile Variables among Obese Men Software Professionals

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Abstract

The aim of the study was to find out the effect of spinning cycle exercise and protein supplementation on selected lipid profile variables among obese men software professionals. For this purpose sixty (N=60) obese men software professionals randomly selected from different parts of Chennai and divided into four groups. Each group consists of 15 subjects. Experimental group I, (spinning cycle exercise group), experimental group II, (protein supplementation group), experimental group III (spinning cycle exercise and protein supplementation group) and IV group acted as control group, which did not participate in any of the special training. The data were collected from all groups before and after the training period of twelve weeks. To determine effect of experimental treatments, the investigator following selected lipid profile variables such as triglycerides, high density lipoprotein, low density lipoprotein. The difference between the initial and final scores was considered as the effect of experimental treatment. Analysis of covariance (ANCOVA) was used to find out the significant difference, if any difference between the control and experimental group on selected lipid profile variables, the level of significance was fixed at 0.05. The result of the study showed that there was a significant difference was found among the entire experiment group on the selected lipid profile variables.

Key words: Spinning cycle exercise, Protein supplement, Triglycerides, High density lipoprotein and Low density lipoprotein

Introduction

A sedentary lifestyle plays a significant role in obesity. Worldwide there has been a large shift towards less physically demanding work, and currently at least 60% of the world's population does not get sufficient exercise. This is primarily due to increasing use of mechanized transportation and a greater prevalence of labour saving technology in the home. World trends in active leisure time physical activity are controversial.

Through physical activities alone people were able to survive in this world. The story of evolution throws some light on the nature and types of activities which are an essential part of modern physical activities which are to be fit for day-to-day existence and to meet the occasional emergencies that arise. Whatever may be the emergency that trust itself on individuals the human beings have to readjust and carry on.

An ideal man should be strong, healthy, broadminded and active Majumdar (1950) opines that "Activity is life while stagnation is death."

Every human being participates in some kind of sports activity or physical exercise during the course of life. This exercise may assume different forms for different individuals. It may be walking, jogging, cycling, working in a factory, participation in games and sports etcetera. Regular participation in exercise programme markedly influences physical, physiological and mental fitness of an individual.

Statement of the problem

The purpose of the study was to examine the effect of spinning cycle exercise and protein supplementation on selected lipid profile variables among obese men software professionals.

Hypothesis

It was hypothesized that there would be a significant impact due to experimental treatments, namely, spinning cycle exercise, protein supplementation and combination of both on selected lipid profile variables and among obese men software professionals compared to control group.

Review of Related Literature

Pal, et al., (2010) documented that the health benefits currently associated with increased dairy intake may be attributable to the whey component of dairy proteins. The present study evaluated the effects of whey protein supplementation on body composition, lipids, insulin and glucose in comparison to casein and glucose (control) supplementation in overweight/obese individuals for 12 weeks. The subjects were randomised to whey protein, casein or glucose supplementation for 12 weeks according to a parallel design. Fasting blood samples and dual-energy X-ray absorptiometry measurements were taken. Seventy men and women with a mean age of 48.4 (SEM 0.86) years and a mean BMI of 31.3 (SEM 0.8) kg/m² completed the study. Subjects supplemented with whey protein had no significant change in body composition or serum glucose at 12 weeks compared with the control or casein group. Fasting TAG levels were significantly lowered in the whey group compared with the control group at 6 weeks ($P = 0.025$) and 12 weeks ($P = 0.035$). There was a significant decrease in total cholesterol and LDL cholesterol at week 12 in the whey group compared with the casein ($P = 0.026$ and 0.045 , respectively) and control groups ($P < 0.001$ and 0.003 , respectively). Fasting insulin levels and homeostasis model assessment of insulin resistance scores were also significantly decreased in the whey group compared with the control group ($P = 0.049$ and $P = 0.034$, respectively). The present study demonstrated that supplementation with whey proteins improves fasting lipids and insulin levels in overweight and obese individuals.

Methodology

For the purpose of the study, sixty (N=60) obese men software professionals from Chennai city were selected as subjects at random and their age ranged between 27 and 47 years. They were divided into four groups consisting of fifteen (n=15) subjects each. The selection of control and experimental groups were done at random. Experimental group I underwent spinning cycle exercise for 45 minutes in a day for three days per week for 12 weeks. Experimental group II underwent protein supplementation three days per week for 12 weeks. Experimental group III underwent the combination of both spinning cycle exercise and protein supplementation three days per week for 12 weeks. And IV group acted as control group. Subjects who were in the control group were not exposed to experimental treatment. Blood samples were collected on criterion variables such as Triglyceride, High Density Lipoprotein and Low Density Lipoprotein. The data are collected from all groups before training and after the training. Analysis of covariance (ANCOVA) was used to find out the significant difference, if any difference between the control and experimental group on selected variables, the level of significance was fixed at 0.05.

Results on triglycerides

The statistical analysis covariance comparing the initial and final means of Triglycerides due to spinning cycling exercise, protein supplementation, combined cycling and protein supplementation and control groups of obese men software professionals is presented in Table I.

Table-I
Computation of Analysis of Covariance on Triglycerides
(In mg/dl)

	Cyclin g Group	Suppleme nt Group	Combin ed Group	Contr ol Group	S V	SS	df	MS	Obtaine d F
Pre Test Mean	182.3 0	184.88	185.56	179.75	B	316.54	3	105.5 1	0.97
S D	10.52	8.26	9.03	13.14	W	6064.5 2	5 6	108.2 9	
Post Test Mean	180.5 1	188.59	180.21	179.75	B	814.02	3	271.3 4	1.89
S D	10.09	11.47	9.03	13.14	W	8024.0 5	5 6	143.2 9	
Adjuste d Post Test Mean	181.3 1	186.87	177.84	182.90	B	631.50	3	210.5 0	5.08*
					W	2276.9 1	5 5	41.40	

* Significant at 0.05 level of confidence

Table I showed that the pretest mean and standard deviation on Triglycerides of obese men software professionals. The obtained F ratio of 0.97 on pretest value was lesser than the required table F value of 2.77. It indicated that there was no significant difference in means of the groups at initial stage. The obtained F ratio of 1.89 on post test means value was lesser than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was insignificant difference in means of the groups after the experimental treatment.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The obtained F value on adjusted mean 5.08 was greater than the required value of 2.77 and hence it was accepted that there was significant differences on the Triglycerides of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results are presented in Table II

Table-II
Scheffe's Post Hoc Analysis on Triglycerides
(In mg/dl)

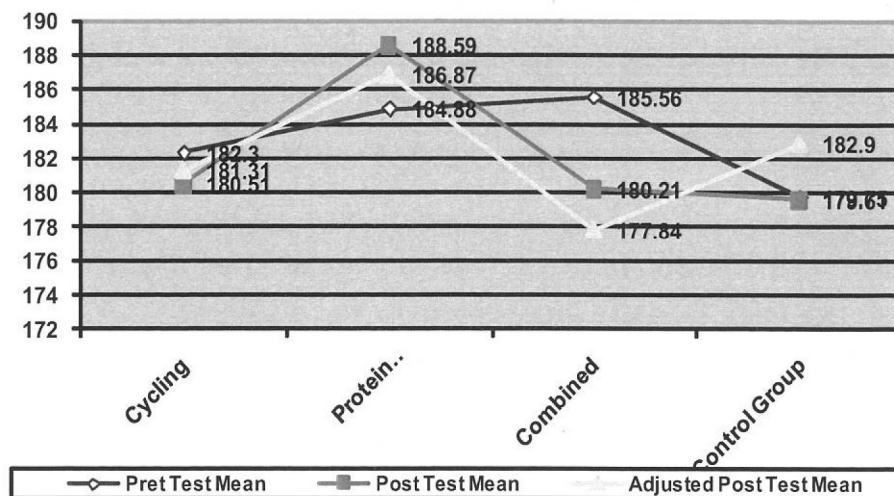
Spinning Cycling Exercise Group	Supplement Group	Combined Group	Control Group	MD	C.I
181.31	186.87			5.56	6.77
181.31		177.84		3.47	6.77
181.31			182.90	1.59	6.77
	186.87	177.84		9.04*	6.77
	186.87		182.90	3.98	6.77
		177.84	182.90	5.06	6.77

* Significant at 0.05 level.

The result presented in Table II shows that the mean difference between Protein Supplementation Group and Combined Group was 9.04, which was greater than the required scheffe's confidential interval value of 6.77. Hence, the difference between the experimental groups was significant. When compared the mean difference between other groups were less than the required confidence interval and were not significant at 0.05 level. The pre test, post test and ordered adjusted means were presented through line graph for better understanding of the results of this study in Figure I.

Figure-1

Line Graph Showing Pre, Post and Adjusted Means on Triglycerides



Results on High Density Lipoprotein

Table-III

Computation of Analysis of Covariance on High Density Lipoprotein (In mg/dl)

	Cycling Group	Supplement Group	Combined Group	Control Group	SV	SS	df	MS	Obtained F
Pre Test Mean	55.87	54.67	56.00	55.27	B	16.85	3	5.62	1.56
StdDev	1.96	1.88	1.77	1.98	W	202.00	56	3.61	
Post Test Mean	56.87	53.33	59.40	55.27	B	282.58	3	94.19	12.82*
StdDev	3.27	1.63	1.77	1.98	W	411.60	56	7.35	
Adjusted Post Test Mean	56.61	53.81	59.06	56.05	B	195.68	3	65.23	10.68*
					W	335.89	55	6.11	

* Significant at 0.05 level of confidence

As shown in Table III, the pretest mean and standard deviation on High Density Lipoprotein of obese men software professionals. The obtained F ratio of 1.56 was lesser than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage. The obtained post test mean F ratio of 12.82 was greater than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups after the experimental treatment.

The obtained F value on adjusted mean was 10.68 was greater than the required value of 2.77 and hence it was accepted that there was significant differences on the High Density Lipoprotein of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results are presented in Table IV.

Table-IV
Scheffe's Post Hoc Analysis on High Density Lipoprotein
(In mg/dl)

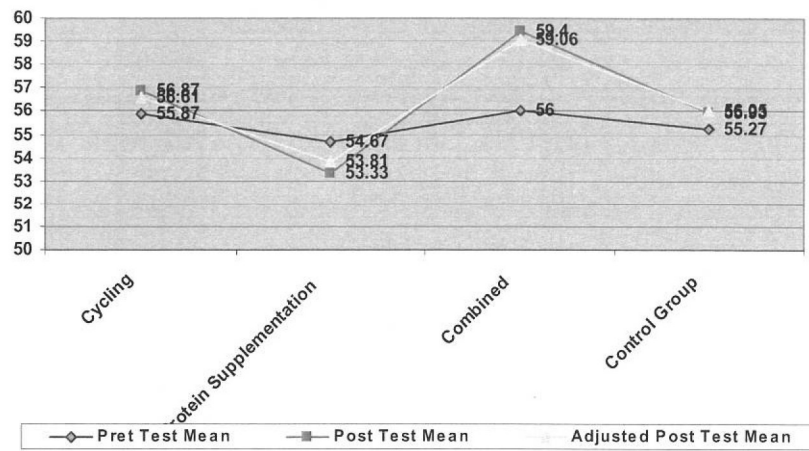
Cycling Exercise Group	Protein Supplement Group	Combined Group	Control Group	MD	C.I
56.61	53.81			2.80*	2.60
56.61		59.06		2.45	2.60
56.61			56.05	0.57	2.60
	53.81	59.06		5.25*	2.60
	53.81		56.05	2.23	2.60
		59.06	56.05	3.02*	2.60

* Significant at 0.05 level.

The mean difference between Spinning Cycling Exercise Group and Protein Supplementation Group was 2.80, Protein Supplementation Group and Combined Group was 5.25 and Combined Group and Control Group was 3.02 it was greater than required confidence interval value of 2.60 and it was proved that there was significant difference between the groups. When compared between other group was not significant at 0.05 level. The pre test, post test and ordered adjusted means were presented through line graph for better understanding of the results of this study in Figure IV.

Figure-2

Graph Showing Pre, Post and Adjusted Means on High Density lipoprotein



Results on Low Density Lipoprotein

Table-V

Computation of Analysis of Covariance on Low Density Lipoprotein (In mg/dl)

	Cycling Group	Supplement Group	Combined Group	Control Group	SV	SS	df	M S	Obtained F
Pre Test Mean	125.91	120.47	124.48	123.85	B	239.13	3	79.71	0.94
SD	9.16	6.62	8.90	11.47	W	4740.34	56	84.65	
Post Test Mean	112.59	124.47	108.15	123.85	B	2783.47	3	927.82	11.19*
SD	8.89	6.40	8.90	11.47	W	4644.58	56	82.94	
Adjusted Post Test Mean	110.54	127.43	107.42	122.50	B	3955.21	3	1318.40	116.88*
					W	620.38	55	11.28	

* Significant at 0.05 level of confidence

As shown in Table V, the pre test mean and standard deviation on Low Density Lipoprotein of obese men software professionals. The obtained F ratio of 0.94 on pre test means of the groups was lesser than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage. The obtained F ratio of 11.19 on post test means of the groups was greater than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups after the experimental treatment.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The obtained F value of 116.88 was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the Low Density Lipoprotein of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results are presented in Table VI

Table-VI
Scheffe's Post Hoc Analysis on Low Density Lipoprotein
(In mg/gl)

Cycling Exercise Group	Supplement Group	Combined Group	Control Group	MD	C.I
110.54	127.43			16.89*	3.54
110.54		107.42		3.12	3.54
110.54			122.50	11.97*	3.54
	127.43	107.42		20.01*	3.54
	127.43		122.50	4.93*	3.54
		107.42	122.50	15.09*	3.54

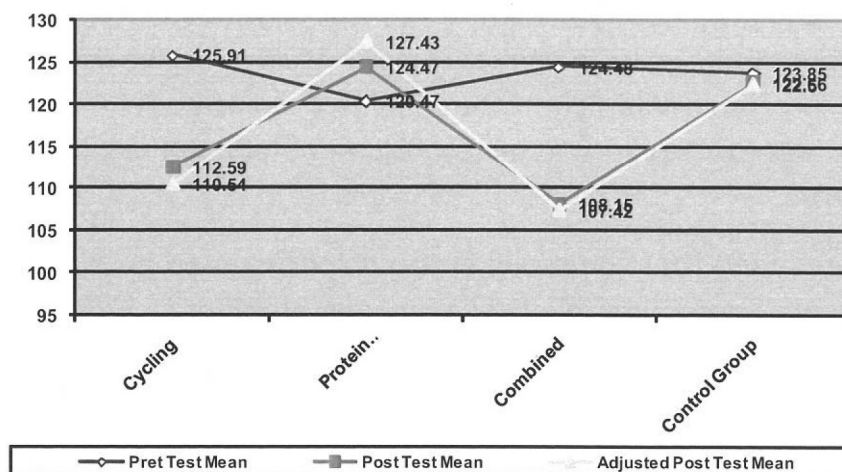
* Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 3.54. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level. Spinning Cycling Exercise Group Vs Protein Supplementation Group was 16.89, Spinning Cycling Exercise Group Vs Control Group was 11.97, Protein Supplementation Group Vs Combined Group was 20.01, Protein Supplementation Group Vs Control Group was 4.93 Combined Group Vs Control Group was 15.09. The other paired mean comparisons were lesser than the required confidence interval and were not significant at 0.05 level.

The pre test, post test and ordered adjusted means were presented through line graph for better understanding of the results of this study in Figure II.

Figure-3

Line Graph Showing Pre, Post and Adjusted Means on Low Density Lipoprotein



Discussion on Findings

The objective of this research was to find out the effect of spinning cycle exercise and protein supplementation on selected lipid profile variables among obese men software professionals. The hypothesis stated that there would be significant effect due to experimental treatments, namely, spinning cycle exercise, protein supplementation and combination of both on selected lipid profile variables and among obese men software professionals compared to control group. The result presented in Table I proved that there was significant reduction in triglycerides of the obese software professionals. The findings of this study are in agreement with the findings of Poole, et.al. (2011) who found the combined effect of a meal replacement with exercise could favorably change serum markers of clinical health and Numao, (2011) who found 60 minutes of stationary cycle exercise at high-intensity (HE) could reduce triglycerides. Result proved that the combined group was significantly better than isolated group, protein supplementation. The results presented in Table III proved that protein supplementation has slightly decreased the high density lipoprotein of the subjects and spinning cycling group and combined group (spinning cycling and protein supplementation) increased high density lipoprotein of the subjects. The results presented in Table VI proved that protein supplementation has slightly increased the low density lipoprotein of the subjects and spinning cycling group and combined group (spinning cycling and protein supplementation) reduced low density lipoprotein of the subjects.

Conclusions

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that combined group (experimented with spinning cycling exercises and protein supplementation) was significantly better than protein supplementation group in reducing lipid profile, triglycerides of the obese software professionals. The other isolated treatments, spinning cycling exercises and protein supplementations were failed to significantly alter the triglycerides.
2. It was concluded that combined group (experimented with spinning cycling exercises and protein supplementation) was significantly better than protein supplementation group and control group in reducing lipid profile, low density lipoprotein of the obese software professionals.
3. It was concluded that isolated group, spinning cycling significantly reduced low density lipoprotein than protein supplementation group and control group and it was concluded that spinning cycling group and combined group were equal in reducing low density lipoprotein of the obese software professionals.
4. It was concluded that combined group (experimented with spinning cycling exercises and protein supplementation) was significantly better than protein supplementation group and control group in improving high density lipoprotein of the obese software professionals.
5. It was concluded that isolated group, spinning cycling significantly improved high density lipoprotein than protein supplementation group and control group. And it was concluded that spinning cycling group and combined group were equal in improving high density lipoprotein than protein supplementation group of the obese software professionals.

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