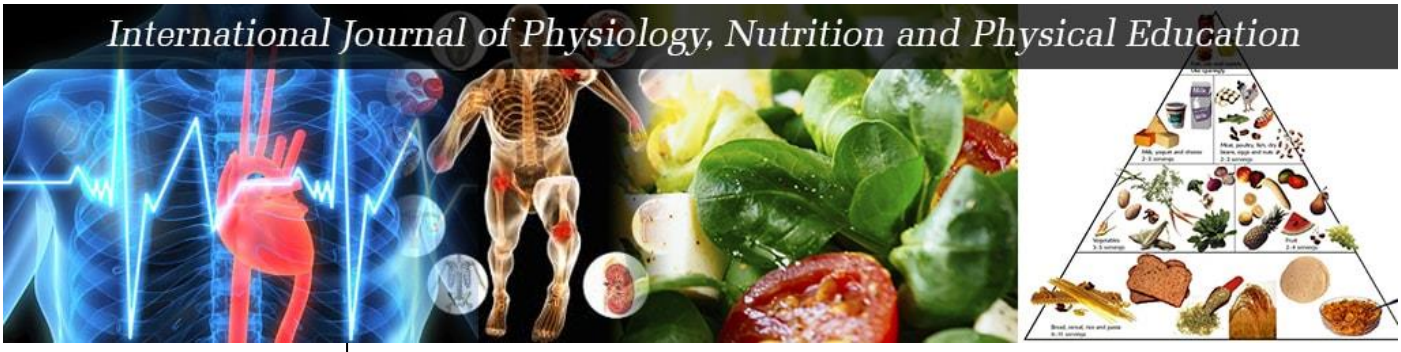

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Effects of two different packages of cardiac rehabilitative protocols on heart rate, peak expiratory flow rate and stress among coronary arteary bypass grafted male patients

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Abstract
Aim of the study: To determine the two different packages of cardiac rehabilitative protocols on Bio-chemical variables among coronary artery bypass graft male patients.
Method of the subject: Experimental design with 45 subjects randomly divided into three equal groups with control, experimental group I and II. The age group was between 45-60 were selected for this study.
Variables: Heart Rate, Peak Expiratory Flow Rate and Stress.
Result: Since in this study the researcher found that there was good change in the improvement in Ejection Fraction, Oxygen Saturation ($PaSO_2$) and Anxiety in the Experimental Groups when compared with control group.
Conclusion: Hence it's concluded that that the decreased on Heart Rate and Stress and increased Peak Expiratory Flow Rate due to the influence of the two different packages of cardiac rehabilitative protocol among the Coronary Artery Bypass Grafting subjects than the control group.

Keywords: CABG, heart rate, peak expiratory flow rate and stress

Introduction
Cardiovascular diseases are leading cause of death globally taking an estimated 17.9 million lives each year. This are a group of disorders of the heart and blood vessels and including coronary heart disease, cerebrovascular diseases, Rheumatic Heart disease and other conditions. More than four out of five coronary vascular disease deaths are due to heart attack and strokes, and one third of those deaths occur prematurely in people under 70 years of age. The most important risk factors of heart disease are unhealthy diet, physical activity& tobacco use. The effect of behavioral risk factors may show up in individual as increased blood pressure, bold glucose blood lipid and overweight. These intermediate risk factors can be measured in primary care facilities and indicate an increased risk of heart attack, stroke, heart failure and other complications.

Statement of the Problem: The researcher has decided to take up different combination of packages of cardiac rehabilitative protocols in coronary artery bypass graft patients. Hence the investigator is very much intent to adopt the concept to find out the different packages of cardiac rehabilitative protocols with the variables cardiopulmonary & psychological variables in coronary artery bypass grafted patients.

Selection of Variables: Heart Rate, Peak Expiratory Flow Rate &Stress.

Experimental Design: The subject were selected for this study through the random group design consisting of pre and post test, forty five CABG subjects randomly divided into three groups, the group was assigned as an experimental group I&II and control group.

Training Schedules and Supplementation: During the training period, the experimental group underwent incentive spirometry and breathing exercise walking program period of

twelve weeks for all days.

Statistical Technique: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups.

Computation of Analysis of Covariance: The following tables illustrate the statistical results of Effects Of exercise protocols Among CABG and ordered adjusted means and the difference between the means of the groups under study.

Computation of analysis of covariance of heart rate

The following tables illustrated the statistical results of the Effects of different intensity of exercise on Heart Rate in Coronary Artery Bypass Grafting Subjects and ordered adjusted means of the groups under study.

Table I: Computation of analysis of covariance of Heart Rate (Scores in beats per minute)

Test	Control	EXP-I	EXP-II	SV	SS	DF	MS	OF	TF
Pre Test	108.47	105.86	109.20	B	92.04	2	46.022	0.65	3.1
				W	2963.87	42	70.57		
Post Test	106.20	86.93	81.47	B	5064.13	2	2532.07	95.20*	3.1
				W	1117.07	42	26.60		
Adjusted	105.97	87.67	80.96	B	5025.41	2	2512.70	145.66*	3.1
				W	707.281	41	17.25		
Mean Gain	2.27	18.93	27.73						

*Significant at 0.05 level of confidence for 2and 42 (df) =3.1 and 41(df)=3.1

Table I shows analyzed data on Heart Rate. The Pre Test means of Heart rate were 108.47 for Control Group, 105.86 for Experimental Group I, and 109.20 For Experimental Group II. The obtained 'F' ratio 0.03 was lesser than the table 'F' ratio 3.1. Hence, the pre test was not significant at 0.05 level of confidence for degrees of freedom 2 and 42.

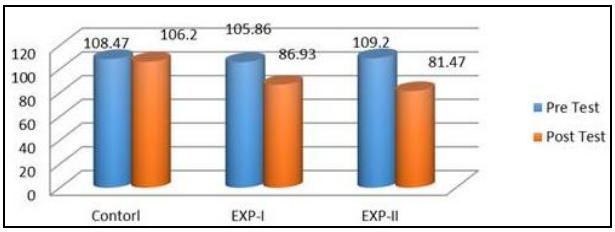

Fig 1: HR

The Post Test means were 106.20 for Control Group, 86.93 for Experimental Group I Group and 81.47 for Experimental Group II. The obtained 'F' ratio 95.20 was higher than the table 'F' ratio 3.1.Hence Post Test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42.

The adjusted Post Test means were 105.97 for Control Group, 87.67 for Experimental Group I, and 80.96 for Experimental Group II. The obtained 'F' ratio 145.66 was higher than the table 'F' ratio 3.1. Hence, the adjusted post test was significant at 0.05 level for the degrees of freedom 2 and 41.

Since the results obtained from the Analysis of Covariance in very good agreement with the earlier results, it is worthwhile to mention that Experimental group II (high intensity Training) is one of the better training methods to sustain the Heart rate level. This in turn helps to be healthy, life style changing to the CABG Person

Table II: Computation of analysis of covariance of PEFR

The following tables illustrated the statistical results of the effects of different intensity of cardiac Rehabilitative protocols on Peak Expiratory Flow Rate and anxiety among coronary artery bypass grafted male patients

Table II: Computation of analysis of covariance of PEFR

Test	Control Group	EXP-I	EXP-II	SV	SS	DF	MS	OF	TF
Pre Test	357.93	370.86	388.67	B	7143.24	2	3571.62	01.67	3.1
				W	89624.00	42	2133.90		
Post Test	395.67	432.73	514.00	B	109904.93	2	54952.47	20.81*	3.1
				W	110932.27	42	2641.24		
Adjusted	409.10	434.33	498.10	B	57655.96	2	28827.98	48.60*	3.1
				W	24318.294	41	593.13		
Mean Gain	37.73	61.86	125.33						

*Significant at 0.05 level of confidence for 2and 42 (df) =3.1 and 41 (df) =3.1

Table II shows analyzed data on Peak Expiratory Heart Rate. The Pre Test means of Peak Expiratory Heart Rate were 357.93 for Control Group, 370.86 for Experimental Group I, and 388.67 for Experimental Group II. The obtained 'OF' ratio 01.67 was lesser than the table 'F' ratio 3.1.Hence, the Pre test was significant at 0.05 level of confidence for degrees of freedom 2 and 42.

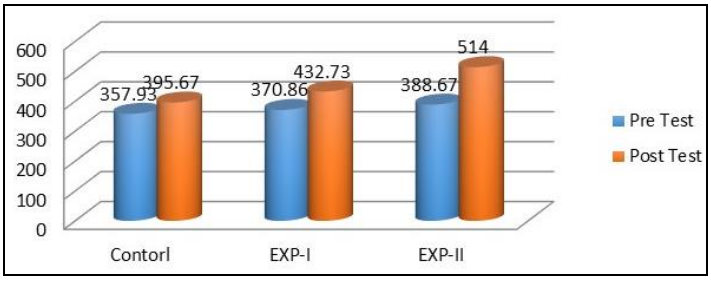

Fig 1: PEFR

The Post Test means were 395.67 for Control Group, 432.73 for Experimental Group I, and 514.00 for Experimental Group II. The obtained 'OF' ratio 20.81 was higher than the table 'OF' ratio 3.1. Hence Post Test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42.
The adjusted Post Test means were 409.10 for Control Group, 434.33 for Experimental Group I, and 498.10 for Experimental Group II. The obtained 'F' ratio 48.60 was higher than the table 'F' ratio 3.1. Hence, the adjusted post test was significant at 0.05 levels for the degrees of freedom 2 and 41.
Since the results obtained from the Analysis of Covariance in very good agreement with the earlier results, it is worthwhile to mention that Experimental group II (high intensity Training) is one of the better training methods to sustain the PEFR level. This in turn helps to be healthy, life style changing to the CABG Persons.

Computation of Analysis of Covariance: The following tables illustrate the statistical results of Effects Of exercise protocols Among CABG and ordered adjusted means and the difference between the means of the groups under study.

Computation of analysis of covariance of Stress
The following tables illustrated the statistical results of the effects of different intensity of exercise on Stress in Coronary Artery Bypass Grafting Subjects and ordered adjusted means of the groups under study.

Table III: Computation of analysis of covariance of Stress

Test	Control Group	EXP-I	EXP-II	SV	SS	DF	MS	OF	TF
Pre Test	4.80	4.33	4.67	B	1.73	2	0.867	2.42	3.1
				W	15.07	42	0.36		
Post Test	3.33	1.33	1.00	B	47.78	2	23.89	115.77*	3.1
				W	8.67	42	0.21		
Adjusted	3.32	1.36	0.99	B	44.98	2	22.49	107.86*	3.1
				W	8.549	41	0.21		
Mean Gain	1.47	3	3.67						

*Significant at 0.05 level of confidence for 2and 42 (df) =3.1and 41 (df)=3.1.

Table III shows analyzed data on Stress. The Pre Test means of Stress were 4.80 for Control Group, 4.33 for Experimental Group I, 4.67 for Experimental Group II. The obtained 'F' ratio 2.42 was lesser than the table 'F' ratio 3.1. Hence, the Pre Test was not significant at 0.05 level of confidence for degrees of freedom 2 and 42.

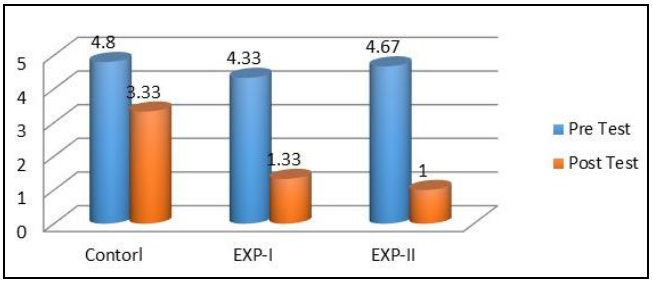

Fig 1: Stress

The Post Test means were 3.33 for Control Group, 1.33 for Experimental Group I, 1.00 for Experimental Group II. The obtained 'F' ratio 115.77 was higher than the table 'F' ratio 3.1. Hence, Post Test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42.
The adjusted Post Test means were 3.32 for Control Group, 1.36 for Experimental Group I, 0.99 for Experimental Group II. The obtained 'F' ratio 107.86 was higher than the table 'F' ratio 3.1. Hence, the adjusted Post Test was significant at 0.05 levels for the degrees of freedom 2 and 41.
Since the results obtained from the Analysis of Covariance in very good agreement with the earlier results, it is worthwhile to mention that high intensity Training is one of the better training methods to sustain the Anxiety level. This in turn helps to be healthy, life style changing to the CABG Persons

Discussion on findings of Heart Rate, PEFR and stress
The findings of investigated the effect of heart rate recovery in Coronary Artery Bypass Grafting subjects; there was a significant reduction in the resting heart rate when compared with the control group. The cardiac rehabilitation protocol was helped in individuals with Coronary Artery Bypass Grafting. Gaillardia F *et al.* (2006) [5] conducted a study on long term effects of cardiac rehabilitation on exercise heart rate recovery after Myocardial Infarction. In this study also Heart rate recovery was decreased significantly in long term exercise training.
Conducted a study in patient undergoing coronary artery bypass graft surgery have compromised ventilatory capacity during the postoperative period (CABG). Thirty-eight patients who have had CABG have lower respiratory muscle strength after surgery. RMT was efficient in restoring ventilatory capacity in the following parameters at this phase: This group includes MIP, MEP, PEF, and tidal volume. Conducted a study to see how the combined impacts of pulse pressure and heart rate affected cardiovascular mortality in a large French population. Between January 1978 and December 1988. A significant increase in cardiovascular mortality in men is associated with a combined elevation of the two components of pulsatile arterial stress, especially in younger men. In women, steady-state stress (measured mostly by MAP) is a significant predictor of cardiovascular mortality, but not pulsatile stress.
Conducted a study on In patients undergoing coronary artery bypass graft (CABG) surgery, the current study is a longitudinal study aiming to investigate structural links between anxiety, depression, personality, and background factors. The same study was conducted in this study also; the patient who underwent CABG subjects will have pain in the chest region because of the insertion area. During their regular activates, the chest will be mobilizing, hence patient will have difficulty in breathing and it alter their lung volumes also, by giving of this exercise training to the patients, they will be free from their pain and also it will improve their chest mobility and patient will be relive from the stress too.
Investigated a Prospective Cohort study to find the effect of health related quality of life style after Coronary artery bypass grafting resulting from excessive preoperative stress and post-operative stress. They have taken 102 patients with 6 months follow up. The study had a significant results that showed

from higher level to lower level reduced their stress after Coronary artery bypass grafting. Hence in this study also got better relief from their stress levels

From these analyses, it is found that the results obtained from the experimental groups had significantly creased on Shown that they were improved their normal life after to the surgery and their lung and chest expansion was also improves in patent with CABG training, ths is due to all the patient has undergone their protocols in time and as well as fallow the roles and regulation. They were relived from their chest complications, the patient will be free from all, and by the way the patient will be relives from Heart Rate, PEFR and Stress in the analyses on Experimental Groups. It is interesting to note that the results obtained the value of stress from Experimental Group II had greater reduction from its higher level to very low level than Experimental Group I on the improvement. This is due to the long term exercise protocol in the Experimental Groups I and II.It is shown that the experimental groups had greater improvement in PEFR and decreased rate of Heart rate, stress in the CABG subjects, due to influence of cardiac rehabilitative protocols for a period of twelve week training.

Results: Within the limitations of the study, the following conclusions were drawn:

1. Experimental groups showed significantly greater increase on PEFR and greater reduction in Heart rate, stress than that control group at the end of twelve week period of time.
2. Experimental group II showed significantly greater increase on PEFR and greater reduction in Heart rate, stress than that Experimental group I at the end of twelve week period of time.

Conclusion

Hence it's concluded that that the PEFR rate was increased and Heart Rate and Stress was reduced from their higher abnormal level to normal level after 12 weeks of training period. Hence the study showed better improvement and it can be more effective in the Post CABG Subjects due to influence of two different packages of cardiac rehabilitative protocals for a period of twelve weeks.

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