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Effects of different intensity of cardiac rehabilitative protocols on oxygen saturation and anxiety among coronary artery bypass grafted male patients

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Abstract

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 Oxygen Saturation and Anxiety variables in coronary artery bypass grafted patients. From these analyses, it is found that the results obtained from the experimental groups had significantly 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, this 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 Stress and Anxiety in the analyses on Experimental Groups. It is interesting to note that the results obtained the value of anxiety and stress from Experimental Group II had greater reduction the anxiety from its higher level to moderate level than Experimental Group I on the improvement. The second variable oxygen saturation was greater increase from its moderate level to higher significant level. So this is due to the long term exercise protocol in the Experimental Groups I and II. It is concluded that the experimental groups had greater improvement in anxiety and pso₂ in the CABG subjects, due to influence of cardiac rehabilitative protocols for a period of twelve week training. Hence it's concluded that that the PASO₂ rate was increased and stress was reduced from their higher abnormal level to normal level after 12 weeks of training period.

Keywords: Oxygen saturation, anxiety, coronary artery etc.

Introduction

Coronary Artery Bypass Graft Surgery has been used for the treatment of coronary artery disease for nearly 50 years, and has been performed for millions of people worldwide. However, little is known about the impact of lifestyle changes, including diet and exercise, on long-term outcomes in patients who have had coronary artery bypass graft surgery. Healthy individuals at sea level usually exhibit oxygen saturation values between 96% and 99%, and should be above 94%. At 1,600 meters' altitude (about one mile high) oxygen saturation should be above 92%. PaSO₂ (arterial oxygen saturation) value below 90% causes hypoxia (which can also be caused by anaemia). The normal oxygen saturation is 90 to 100%. When patient having normal saturation, the anxiety level are in normal, because the partial pressure of oxygen will be in the capillary level. So that the pressure may vary in the stress level.

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 Oxygen Saturation and Anxiety variables in coronary artery bypass grafted patients.

Selection of Variables: Oxygen Saturation & Anxiety.

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

Methodology

During the training period, the experimental group underwent incentive spirometry and breathing exercise with 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. Thirumalaisamy R. (2004) [8].

Computation of analysis of covariance of oxygen saturation (PASO2)

The following tables illustrated the statistical results of the effects of different intensity of cardiac rehabilitative protocols on oxygen saturation and anxiety among coronary artery bypass grafted male patients.

Table 1: Computation of analysis of covariance of PaSO₂

Test	Cont Group	EXP-I	EXP-II	SV	SS	DF	MS	OF	TF
pre test	93.67	93.53	93.73	B	0.31	2	0.156	0.05	3.1
				W	120.00	42	2.86		
post test	90.60	98.73	100.00	B	780.58	2	390.29	113.41	3.1
				W	144.53	42	3.44		
Adjusted	90.61	98.71	100.02	B	780.08	2	390.04	116.64	3.1
				W	137.10	41	3.34		
Mean Gain	3.07	5.2	6.27						

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

Discussions and findings of PaSO₂

Table I shows analyzed data on PaSO₂. The Pre Test means of PaSO₂ were 93.67 Control Group, 93.53 for Experimental Group I, 93.73 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. The Post Test means were 90.60 for Control Group I, 98.73 for Experimental Group I, 100.00 for Experimental Group II. The obtained 'F' ratio 113.41 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 90.61 for Control Group, 98.71 for Experimental Group I, and 100.02 for Experimental Group II. The obtained 'F' ratio 111.64 was higher than the table 'F' ratio 3.1. Hence, adjusted post-test was significant at 0.05 levels for the degrees of freedom 2 and 42.

Oxygen Saturation it indicates that amount of oxygen travelling through your body with your Red blood cells. The measurement of oxygen saturation is crucial in the management and comprehension of patient care. Because hypoxemia can have a variety of acute negative effects on various organ systems, oxygen is strictly regulated inside the body. The brain, heart, and kidneys are among them. Oxygen saturation is a measurement of how much hemoglobin is currently bound to oxygen against how much is unbound. Hemoglobin is made up of four globular protein subunits at the molecular level.

The product of arterial-venous oxygen saturation differences and blood flow is one description of oxygen consumption

within the body. Aerobic metabolism is one way in which the body consumes oxygen. When oxygen is utilized to convert glucose to pyruvate, two molecules of adenosine triphosphate are released (ATP). The oxygen-hemoglobin dissociation curve is a crucial part of this process. Hemoglobin quickly binds free oxygen to produce Oxyhemoglobin in the blood, leaving just a little amount of free oxygen dissolved in the plasma. The oxygen-hemoglobin dissociation curve is a graph of hemoglobin % saturation as a function of oxygen partial pressure (PO₂). Hemoglobin will be 100 percent saturated with oxygen at a PO₂ of 100 mmHg, indicating all four heme groups will be bound.

Julia Alencar Renault *et al.* (2009) [9] conducted a study to compare the effects of deep breathing exercises (DBE) and flow-oriented incentive spirometry (IS) in patients who had coronary artery bypass grafting (CABG): FVC is for forced vital capacity, FEV1 stands for forced expiratory volume in one second, and O₂ saturation stands for maximal respiratory pressures with 36 Patients showed better changes in saturation.

Hence this saturation will be plays a major role in the CABG, as its maintain the normal level, patient will be good in pulmonary status, and he can be moved to post-operative ward and he can be discharged on 7th post op day itself.

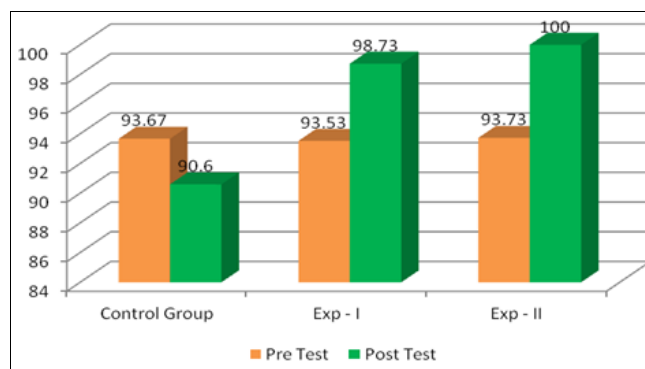


Fig 1: Bar diagram shows pre and post mean difference of experimental groups and control group of PaSO₂

Table 2: Computation of analysis of covariance anxiety

TEST	EXP-I	EXP-II	EXP-III	SV	SS	DF	MS	OF	TF
Pre Test	9.33	8.80	9.27	B	2.53	2	1.267	1.14	3.1
				W	46.67	42	1.11		
Post Test	2.8	1.47	2.13	B	13.33	2	6.67	7.39	3.1
				W	37.87	42	0.90		
Adjusted	2.79	1.48	2.13	B	12.35	2	6.18	6.70	3.1
				W	37.79	41	0.92		
Mean Gain	6.53	7.33	7.13						

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

Discussion on findings of anxiety

Table II shows analyzed data on Anxiety. The pre-test means of Anxiety were 9.33 for Experimental Group I, 8.80 for Experimental Group II, and 9.37 for Control Group. The obtained 'F' ratio 1.44 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. The Post Test means were 2.8 for Experimental Group I, 1.47 for Experimental Group II, and 2.13 for Control Group. The obtained 'F' ratio 7.39 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 2.79 for Experimental

Group I, 1.48 for Experimental Group II, and 2.13 for Control Group. The obtained 'F' ratio 6.70 was higher than the table 'F' ratio 3.1 Hence, adjusted post-test was significant at 0.05 levels for the degrees of freedom 2 and 42.

Donna Fitzsimons *et al.* (2003) [10] investigated a qualitative and quantitative analysis on CABG. The purpose of this study was to describe the types and level of anxiety that patients who were scheduled for coronary artery bypass surgery experienced. In this prospective, cross-sectional study, a qualitative interview and the State Trait Anxiety Inventory were used. The purpose of this study is to identify the key sources of anxiety mentioned by the participants. As a result, a better understanding of these patients' requirements may be facilitated, and particular therapies to help alleviate the problem may be developed.

Hans bernd Rothenhausler *et al.* (2005) [3] conducted a prospective follow up study in CBAG, The natural history of psychiatric morbidity, postoperative delirium, cognitive decline, and health-related quality of life (HRQOL) in cardiac surgery patients, as well as the impact of neurocognitive dysfunction on HRQOL following cardiopulmonary bypass surgery, are poorly understood. 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 Stress level. This in turn helps to be healthy, life style changing to the CABG Persons. The severity of depression and anxiety problems improved and returned to preoperative levels after 12 months, and 6 of the 30 patients who were followed up on showed cognitive abnormalities. When compared to baseline quality of life data, our patients' HRQOL SF-36 self-reports improved dramatically. However, lower total cognitive function scores over time were linked to decreased HRQOL.

Hence this study also has done for 12 weeks of training programme, and patients were very co operative and all the patients will have anxiety that, will they be return back to their normal life. In this study also the patients had the same, but we have given the exercise programme and make the patient to be involve in the each and exercise and improve their chest mobility and as well as well being of their normal life. 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.

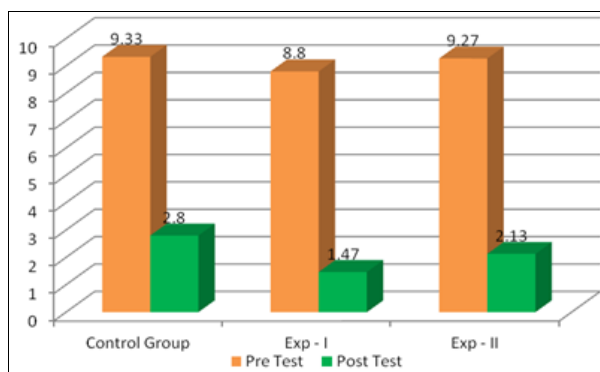


Fig 2: Bar diagram shows pre and post mean difference of experimental groups and control group of anxiety

Discussion on findings of saturation and anxiety

From these analyses, it is found that the results obtained from

the experimental groups had significantly 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, this 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 Stress and Anxiety in the analyses on Experimental Groups. It is interesting to note that the results obtained the value of anxiety and stress from Experimental Group II had greater reduction the anxiety from its higher level to moderate level than Experimental Group I on the improvement. The second variable oxygen saturation was greater increase from its moderate level to higher significant level. So this is due to the long term exercise protocol in the Experimental Groups I and II. It is concluded that the experimental groups had greater improvement in anxiety and pso2 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:

Experimental groups, showed significantly greater increase on PASO2 and greater decrease on Anxiety than that of control group at the end of twelve week period of time.

Experimental group II showed significantly greater increase its percentage on PaSo2 and reduction the anxiety level than the control group at the end of twelve week period of time.

Conclusion

Hence its concluded that that the PASO2 rate was increased and stress was reduced from their higher abnormal level to normal level after 12 weeks of training period.

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