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Research Article

EFFICACY OF RETRO-WALKING AND RELAXATION TECHNIQUES ON RESPIRATORY PARAMETERS, FUNCTIONAL EXERCISE CAPACITY AND QUALITY OF LIFE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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ABSTRACT

Background: People with Chronic Obstructive Pulmonary Disease (COPD) suffer from severe physical impairments, which often elicit significant psychological distress and impact their quality of life.
Objectives: The purpose of the study is to analyze the effect of Retro-walking and Relaxation techniques on Respiratory parameters, functional exercise capacity and quality of life in patients with Chronic Obstructive Pulmonary Disease.
Need for The Study: Walking, a low impact exercises places minimum stress and it is an easy exercise for chronic obstructive pulmonary disease patients to perform.Doing the same fitness routine every day can be distressing after training. To prevent this, the study incorporating 10-20 minutes of backward walking with relaxation exercises provides with the workout variety to the mind and body crave.
Methodology: Total number of 30 patients was selected for the study. Out of 30 patients 15 were assigned into two groups, **Group A** received Retro-walking along with Relaxation exercise and **Group B** received Relaxation exercise alone. The study was conducted for a duration of 6 months and Treatment duration was 10 – 20 min.
Outcome Measures: Borg's scale, Clinical COPD Questionnaire (CCQ)
Conclusion: Based on the outcome of the statistical analysis and literature review, it is believed that the Retro-walking with relaxation techniques shows significant improvement in people with chronic obstructive pulmonary disease.

INTRODUCTION

Chronic obstructive pulmonary disease is a chronic condition of which physical function, social function and general health are severely affected[1] .Chronic obstructive pulmonary disease is used to describe resistance to airflow that is associated mainly with Emphysema and Chronic bronchitis. There should be an efforts to decrease rates of smoking and to improve indoor and outdoor air quality[1]. Pulmonary rehabilitation is recognized as an essential component in the management of chronic obstructive pulmonary disease[2]. Retro- walking is one such mode of training. Retro-Walking significantly improves walking capacity and quality of life for suffers of COPD[3]. For patients with chronic obstructive pulmonary disease who expands extra energy just to breath, walking regularly can improve the body's ability to utilize oxygen.

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A combination of backward running and walking may improve cardio respiratory fitness and change body composition[3]. Walking, a low impact exercises places minimum stress and it is an easy exercise for chronic obstructive pulmonary disease patients to perform. Walking helps to build the muscle endurance[4]. As the patients build the endurance breathing at rest or during activity will become easier and will increase exercise tolerance. The relaxation technique helps to improve the quality of life and also reduce the dyspnoea, as well as improve their physical activity. Breathing exercises help people to breathe more effectively and efficiently[5]. Breathing exercises can help if patient suffers from, short of breath in patients with chronic obstructive pulmonary disease. The progressive muscle relaxation is an effective treatment in people with chronic obstructive pulmonary disease[6]. It is a therapy that focuses on tightening and relaxing the muscle. The progressive muscle relaxation reduce anxiety and dyspnoea as well as reduces intensity of pain, and relieve stress in patients with Chronic Obstructive Pulmonary Disease[1].

Doing the same fitness routine every day can feel boring after awhile. To prevent this, the study incorporating 10-20 minutes of backward walking with relaxation exercises provides with the workout variety to the mind and body crave[19].On the surface, walking backward may seem silly or useless. But it has its impact on physical and mental well-being. It's a simple way to challenge different muscles and force your mind to focus and operate differently. Walking backward provides a number of benefits to all COPD patients mind and body[20].

The use of retro-walking and relaxation techniques in patients with chronic obstructive pulmonary disease to relieve dyspnoea and anxiety level, still remains to be debated. Hence the study aims in contributing towards the "Efficacy of retro-walking and relaxation techniques in patients with Chronic Obstructive Pulmonary Disease".

METHODOLOGY

Sample design

The study was conducted with two groups-a comparative study.

Sample Size

In total of 30 patients were included into the study with 15 patients each in the Group A-Experimental group and Group B-Control group.

Study Duration

The study was conducted for a duration of 6 months and Treatment time was 10-20 min.

Selection criteria

Inclusion criteria

- Moderate chronic obstructive pulmonary diseases of age group of 40-50 years
- Severe chronic obstructive pulmonary diseases of age group of 40-50 years

Exclusion criteria

- Unstable cardiac disease
- Long term oxygen therapy
- Inability to complete exercise training
- Osteoarthritis
- Body mass index >35kg
- Presence of Musculo skeletal disorders

Assessment Parameters

- Borg's scale
- Clinical COPD Questionnaire (CCQ)

Group A (Experimental group)

In this patients underwent retro-walking with relaxation techniques under supervision.

Group B (Control group)

In this group patients underwent relaxation techniques such as breathing exercises and progressive muscle relaxation techniques.

METHODOLOGY

Retro- Walking

Procedure

In the walk group patients were encourage to walk on a 26m track with initial training speed.

Supervised walking training:
Intensity: 80% of average speed.
Duration: 10-20 min.

Termination Criteria

- Dyspnoea
- Leg fatigue
- Giddiness

Relaxation Techniques

Breathingexercises

- Diaphragmatic Breathing
- Apical Breathing
- Segmental Breathing

In Diaphragmatic Breathing, the patient were demonstrated with correct method of diaphragmatic breathing by keeping hands over the rectus abdominus just below the anterior costal margin. Followed by they have to take deep breath through nose and breath out via mouth in complete relaxed position. In apical breathing, demonstrated the correct method of apical breathing. Patient were asked to keep both the hands crossly over the clavicle and ask to take deep breath through nose and breath out through mouth. In segmental breathing, patients were asked to place the hands along the lateral aspect of the lower ribs followed by they have to take a deep breath through nose and breath out through mouth and feel the ribcage move down ward and inward.

Progressive muscle relaxation

Tight clothes must be loosen and off shoes. Take few minutes relax, breathing in and out in slow deep breaths. The progressive muscle relaxation starts from distal to proximal. When relaxed and ready to start, ask the patient to shift the attention towards the right foot, squeezing as tightly as possible. Then hold for a count of 10secs. Relax the right foot, focus on the tension flowing away and the way the patient feels the foot becomes loose. Stay in this relaxed state for a moment, breathing deeply and slowly. Then ask the patient to shift the attention to left foot and follow the same sequence. Then slowly relax the muscles. Again the patient should concentrate on each muscle and the same sequence is followed.

Statistical Tools

Independent "t" test was used to show the effectiveness of treatment between group A and group B. The "t" value was calculated using the formula,

The "t" value was calculated using the formula,

$$\mathbf{t} = \frac{\bar{x}_1 - \bar{x}_2}{s}\sqrt{\frac{n_1 n_1}{n_1 + n_1}}$$

$$\mathbf{S} = \sqrt{\frac{\sum(x_1 - x_1^1)^2 + \sum(x_2 - x_2^1)^2}{n_1 + n_2 - 2}}$$

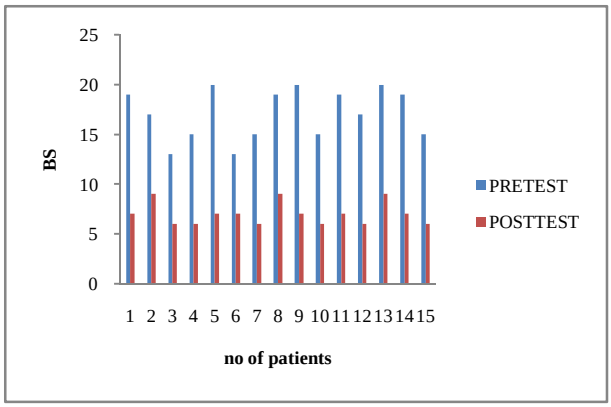
Data Analysis and Interpretation

Table 1 Borg's Scale For Group A

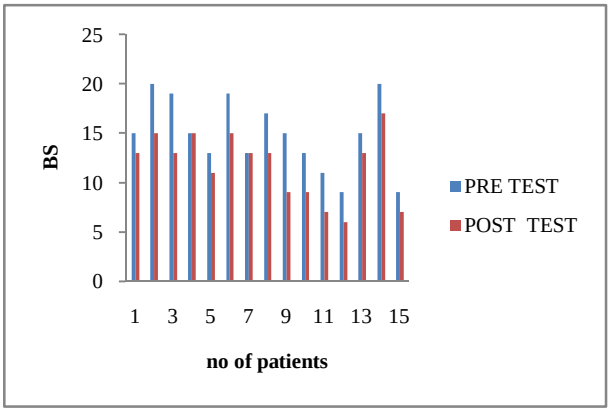
S. no	Pre test	Post test	$X_1-\bar{X}1$	$(X_1-\bar{X}1)^2$
1	18	7	0	0
2	15	9	2	4
3	12	6	-1	1
4	11	6	-1	1
5	20	7	0	0
6	11	7	0	0
7	10	6	-1	1
8	19	9	2	4
9	20	7	0	0
10	15	6	-1	1
11	19	7	0	0
12	17	6	-1	1
13	20	9	2	4
14	19	7	0	0
15	15	6	-1	1

Table 2 Borg's Scale for Group B

S.No	Pre test	Post test	$X_2-\bar{X}_2$	$(X_2-\bar{X}_2)^2$
1	14	13	1.27	1.6129
2	22	15	3.27	10.6929
3	11	13	1.27	1.6129
4	16	15	3.27	10.6929
5	11	11	-0.73	0.5329
6	18	15	3.27	10.6929
7	14	13	1.27	1.6129
8	15	13	1.27	1.6129
9	15	9	-2.73	7.4529
10	13	9	-2.73	7.4529
11	11	7	-4.73	22.3729
12	9	6	-5.73	32.8329
13	15	13	1.27	1.6129
14	20	17	5.27	27.7729
15	9	7	-4.73	22.3729



Graph 1 Borg's Scale For Group A



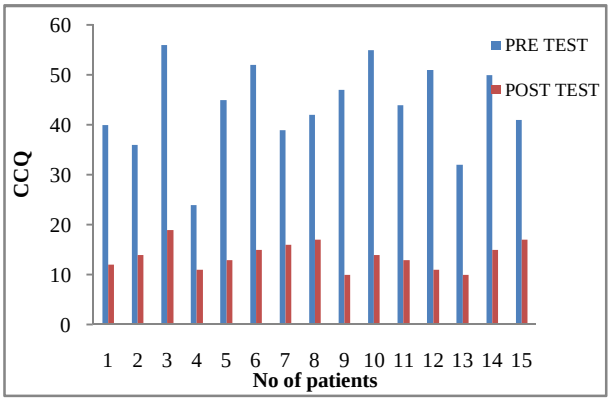
Graph 2 Borg's Scale For Group B

Table 3 Clinicalcopd questionnaire Group A

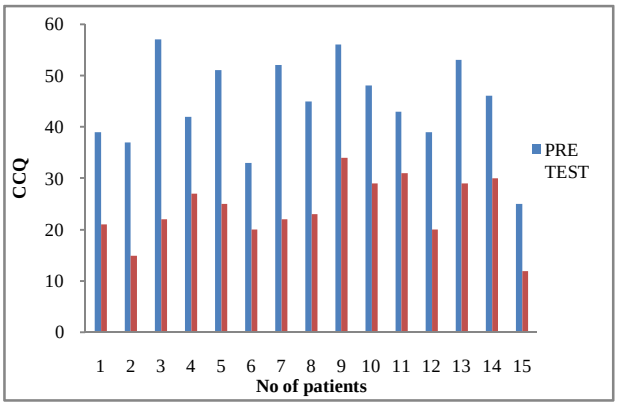
S. No	Pretest	Posttest	$X_1-\bar{X}1$	$(X_1-\bar{X}1)^2$
1	41	12	-1.8	32.4
2	35	14	0.2	0.04
3	52	19	5.2	27.04
4	20	11	-2.8	5.6
5	40	13	-0.8	0.64
6	50	15	1.2	1.44
7	32	16	2.2	4.84
8	40	17	3.2	10.24
9	42	10	-3.8	14.44
10	50	14	-0.2	0.04
11	40	13	-0.8	0.64
12	50	11	-2.8	5.6
13	30	10	-3.8	14.44
14	51	15	1.2	1.44
15	40	17	3.2	10.24

Table 4 Clinical copdquestionnaire Group B

S.No	Pre test	Post test	$X_2-\bar{X}_2$	$(X_2-\bar{X}_2)$
1	32	21	-3	9
2	30	15	-9	81
3	50	22	-2	4
4	41	27	3	9
5	50	25	1	1
6	37	20	-4	16
7	45	22	-2	4
8	43	23	-1	1
9	35	34	10	100
10	40	29	5	25
11	43	31	-7	49
12	39	20	-4	16
13	53	29	5	25
14	46	30	6	36
15	25	12	-12	144



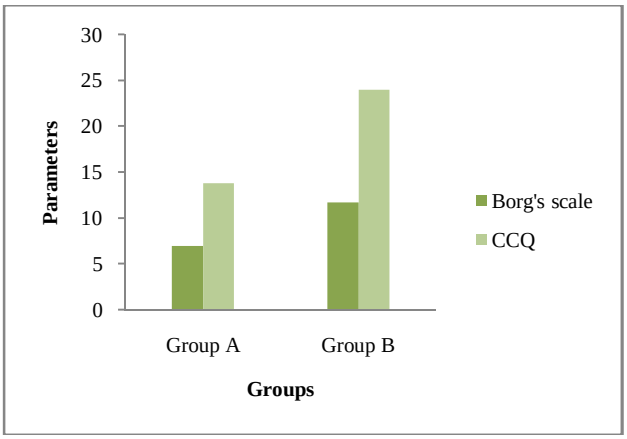
Graph 3 Clinical Copdquestionnaire Group A



Graph 4 Clinical Copdquestionnaire Group B

Table 5 Standard Deviation Between Group A Group B For Borg's Scale And Clinical Copdquestionnaire

Parameters	Group	Mean difference	Standard deviation	Calculated 't' value
Borg's scale	Group A Group B	7 11.73	2.474	5.12
Clinicalcopd questionnaire	Group A Group B	13.8 24	4.814	5.91



Graph 5 Mean Difference Between Group A Group B For Borg's Scale And Clinical Copdquestionnaire

DISCUSSION

The purpose of study is that there is significant improvement in quality of life and reduction of anxiety level in patients with chronic obstructive pulmonary disease.

The study consists of two groups (GROUP A and GROUP B); There are15 COPD patients in each group. In GROUP A patients received retro-walking along with relaxation techniques and GROUP B received only relaxation techniques. The subjects of individual groups are given the respective mode of treatment for certain periods.

In each group Borg's scale and Clinical COPD Questionnaire (CCQ) are used. The Borg's scale is used to identify the reduction of dyspnoea level and CCQ is used to measure the health status in patients with chronic obstructive pulmonary disease. Using BORG'S SCALE, in GROUP A there is maximum improvement in 5 patients, moderate improvement in 10 patients. In GROUP B there is moderate improvement in 8 patients and moderate improvement in 4 patients and no improvement in 3 patients. UsingClinical COPD Questionnaire (CCQ), in GROUP A there is maximum improvement in 5 patients, moderate improvement in 5 patients and minimum improvement in 5 patients. In GROUP B there is moderate improvement in 2 patient and minimum improvement in 4 patients.

The retro-walking and the relaxation techniques plays an important role in dyspnoea reduction and also reduces the anxiety and improves health status in patients with chronic obstructive pulmonary disease. The calculated 'T' value for Borg's scale 5.1278 and CCQ is 5.9153, which is greater than the table value of 2.048 in accordance to the level of significance of 0.05. Hence it is clear that ground based Retro-walking along with relaxation techniques were beneficial in treating with chronic obstructive pulmonary disease than the relaxation techniques alone.

CONCLUSION

Based on the outcome of the statistical analysis and literature review, it is believed that the Retro-walking with relaxation techniques shows significant improvement in people with chronic obstructive pulmonary disease. It is advantageous in reducing in symptoms in patients with chronic obstructive pulmonary disease.

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