

Case Study

# Effect of Pulmonary Rehabilitation on Non-obstructive Disease Congenital Kyphoscoliosis Patient in Kuwait

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## Abstract

A case study of a non-COPD (Chronic Obstructive Pulmonary Disease) patient with congenital kyphoscoliosis to see the effect of pulmonary rehabilitation after 36 sessions given for chest disease in Kuwait with signs and symptoms, physical capacity, functional level, and Quality of life.

## Introduction

Pulmonary rehabilitation programs improve exercise tolerance, muscle strength, and dyspnoea in patients with non-COPD. The aim of the case study is to see the effect of pulmonary rehabilitation in reducing respiratory exacerbation signs and symptoms and improving pulmonary functional test values, and level of physical activity in a patient with non-obstructive pulmonary disease congenital sclerosis in Kuwait [1].

## Case

60-year-old female Kuwaiti patient diagnosed with non-obstructive pulmonary disease congenital kyphoscoliosis since 2005. The patient underwent spine correction with implanted screw for the whole spine in 2015 in the USA. The patient complained of very severe shortness of breath while resting and walking and ADLs (Activities of daily living). She is on oxygen support at 3 L/min with recurrent infection and hospitalisation 3 to 5 times a year after surgery. She referred to pulmonary rehabilitation to improve lung function, physical activity performance, and Daily activity of life [2].

Treatment was given in 36 sessions during 6 months 2 times per week with a daily home programme including aerobic exercise, strengthening exercise, stairs exercise, IMT device for the diaphragm, and active breath exercise Monitoring the patient level of saturation in blood SPO2 and respiratory rate during and after the session [3].

## Discussion

Recent evidence-based research worldwide shows the effect of pulmonary rehabilitation in COPD and non-COPD patients in reducing chronic signs and symptoms and improving physical activity levels.

### More Information

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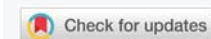
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**Keywords:** Physical activity; Pulmonary rehabilitation; Non-COPD disease; Improvement of quality of life; Improvement of functional level



The patient before pulmonary rehabilitation was not able to walk outdoors; at home using a wheelchair to transfer with severe shortness of breath, fatigue, and reduced cardiorespiratory endurance on 3 L/O2. The patient was referred to a pulmonary rehabilitation clinic to treat the patient's signs and symptoms and improve lung function.

The aerobic exercise started including cycling, walking, gait training, and hand ergometer for 30 minutes and monitoring patient SO2 during the session also. Strengthening exercises given included sit-to-stand 10 times with 3 sets, 1 to 2 kg weight for shoulder flexors, elbow flexors, and shoulder abductors 10 times repetitions with 3 sets done per day. Inspiratory Muscular Training (IMT) device for diaphragm strengthening for 5 minutes and progressed to 15 minutes, 4 times per day as a home programme. Active cycle breathing exercises while resting and moving 10 times each hour. The stair exercise achieved 10 steps with 2 sets after 14 sessions, the patient was not able to begin to use due to severe shortness of breath and reduced cardiorespiratory endurance. Home programme 3 times per day given at home with self-monitor for SO2; not below 90%. After 36 sessions patient was able to walk 30 minutes with 1.5 L/O2 and use a car to drive safe [4] (Table 1).

**Table 1:** Physical examination.

Physical examination	Borg scale	6MWT test	FEV1% prediction	Auscultation
Before pulmonary rehabilitation	6/10	180 meters	23%	Severely reduced air entry apical and basal with 3L/O2
After pulmonary rehabilitation	2/10	390 meters	28%	Reduced air entry basal with 1.5 L/O2



## Conclusion

Pulmonary rehabilitation is effective with non-COPD congenital sclerosis patients. The patient improved in functional test 6 MWT (Maintenance Wakefulness Test) achieving a great score of 390 meters with a Borg score of 2/10 while the test shows significant improvement in cardiorespiratory endurance. Forced expiratory volume (FEV1) percentage, FEV1% = 28 prediction where after discharge that reflects the improvement in lung volumes and function. Pulmonary rehabilitation is essential for symptomatic non-COPD congenital disease with severe shortness of breath while resting and physical exercise in daily activity life. Starting early with pulmonary rehabilitation 2-3 times per week including aerobic exercise 30 minutes, strengthening exercises of 12 repetitions 3 sets, breathing exercises, and an intercostal muscle trainer device IMT 3-5 times per day is recommended for non-obstructive pulmonary disease.

## Ethical approval

Consent form written and taken from the patient to publish his case and improvement in lung function and ADLs.

## Acknowledgement

Author PT Nourah Al Mutairi contributes to all stages of

this work including Data taking, History taken, and Tests taken 6 MWT pre and post-pulmonary rehabilitation sessions.

Author PT Nourah Al Mutairi contributes Data, Analysis of the PFT test, and 6 MWT to the Conclusion of results of benefits of pulmonary rehabilitation.

Author PT Nourah Al Mutairi contributes Findings, results, and critical analysis to the PFT test and 6 MWT.

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