# Impacto De Um Programa De Reabilitação Respiratória Nos Autocuidados Higiene, Vestir-Se/Despir-Se E Andar Avaliados Pela Escala London Chest Of Daily Living Em Pessoas Com Doença Respiratória Crónica

## Impacto De Rehabilitación Respiratoria En Autocuidados Higiene, Vestir/Despir Y Andar En Personas Con Enfermedad Respiratoria Crónica

## The Impact Of Pulmonary Rehabilitation On Self-Care Hygiene, Dressing/Undressing And Walking In Patients With Chronic Respiratory Disease

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### RESUMO

As pessoas com doença respiratória crónica (DRC) apresentam compromissos do processo respiratório, com elevado impacto no autocuidado, designadamente devido a dispneia e cansaço decorrente da imobilidade induzida pela doença. Torna-se, assim relevante conhecer qual o impacto dos programas de reabilitação respiratória (PRR) nos autocuidados higiene, vestir/despir-se e andar.

Trata-se de um estudo quasi-experimental, que incluiu pessoas com DRC admitidas para PRR, sendo o impacto da DRC nos autocuidados avaliado no inicio e no final do PRR.

Foram incluídas 38 pessoas (71,9% homens), mediana de idades 67 anos (±15.6) e FEV1% mediano de 39,51%.

Encontradas melhorias estatística ($p$<0,001) e clinicamente significativas nos autocuidados estudados.

Os dados deste estudo permitem-nos concluir que este programa de RR melhora a independência funcional para os Autocuidados Higiene, Vestir-se/Despir-se e Andar avaliadas pela Escala London Chest Activity of Daily Living em pessoas com DRC.

**Palavras chave:** enfermagem de reabilitação; reabilitação respiratória; autocuidado

### RESUMEN

Las personas con enfermedad respiratoria crónica (ERC) presentan compromisos del proceso respiratorio, con impacto elevado en el autocuidado, en particular debido a disnea y fatiga debido a la inmovilidad inducida por la enfermedad. Esta investigación se vuelve relevante en el sentido de conocer cuál es el impacto de los programas de rehabilitación pulmonar (PRP) en los autocuidados higiene, vestir / desvestirse y andar.

Se trato de un estudio quase-experimental, que incluyo personas con DRC admitidas para PRP, siendo el impacto de la DRC en los autocuidados evaluado al inicio y al final del PRP.

Se incluyeron 38 personas (71,9% hombres), mediana de edades 67 años (± 15.6) y FEV1% medio del 39,51%.

Se encontraron mejoras estadísticas ($p$ < 0,001) y clínicamente significativas en los autocuidados estudiados.

Los datos de esta investigación permiten concluir que este programa de RR mejora la independencia funcional para los Autocuidados Higiene, Vestir / Despirarse y Andar evaluados por la Escala London Chest Activity of Daily Living en personas con DRC.

**Palavas clave:** reabilitacion pulmonar; autocuidado

### ABSTRACT

Patients with chronic respiratory disease (CRD) have impaired respiratory process, with a high impact on self-care, caused by dyspnea and fatigue due to immobility induced by the disease. The relevance of this study is to know the impact of pulmonary rehabilitation programs (PRP) on self-care hygiene, dressing/undressing and walking.

This is a quasi-experimental study that included CRD patients admitted to PRP and the impact of CRD on self-care was assessed at the beginning and at the end of the PRP.

Thirty eight patients were included in the study (71.9% men), median ages 67 years-old (± 15.6) and FEV1% median of 39.51%.

Statistical improvements ($p$ < 0.001) and clinically significant were found in all self-care studied.

The data from this study allow us to conclude that this PRP improves functional independence for the self-care of Hygiene, Dressing/Undressing and Walking evaluated by the London Chest Activity Scale of Daily Living in CRD patients.

**Keywords:** rehabilitation nursing; pulmonary rehabilitation; self-care.

## INTRODUCTION

Structuring reference in the clinical and conceptual practice of Nursing, Dorotheia Orem's Self-Care Theory is based on the assumption that the person has the capacity to take care of himself by performing activities and behaviors to stay healthy [1-2].

Defined by the International Council of Nurses (ICN) as "an activity carried out by itself with the specific characteristics: to deal with what is necessary to maintain itself, to remain operational and dealing with basic and intimate individual needs and activities of daily living" [3] the concept of self-care appears in the context of people with chronic respiratory disease (and especially with Chronic Obstructive Pulmonary Disease (COPD)~~COPD~~) that is often compromised.

Functional dependence due to the symptomatic impact limits acts as simple as taking care of hygiene, dressing or undressing and walking, conditioning the dignity of the person whose daily life is affected by the functional limitation in their basic activities.

In this context, intolerance to exercise, or to physical activity, does not result only from the loss of lung function, but from alterations in gas exchange and peripheral muscle deconditioning; being the two main reasons for the reduction or cessation of activity the dyspnea and muscle fatigue in the lower limbs.

This impairment of the physical domain, in addition to limiting people in their self-care, also limits their family, social and professional interaction with serious repercussions on quality of life.

In this sense, the therapeutic intervention of Rehabilitation Nurses should aim at increasing tolerance to physical activity in order to maintain or resume functional independence, prescribing, implementing and evaluating a set of interventions that enhance respiratory and muscle function, and promote training and behavioral change [1-4].

Respiratory Rehabilitation (RR) is the non-pharmacological treatment indicated for people with chronic respiratory disease [4]. Performed by a multidisciplinary team, includes physical exercise, education and behavioral change as foundation stones [4-5]. Designed to improve physical and emotional condition, and to promote prolonged adherence to health behaviors, these programs reduce dyspnea and increase tolerance to physical exercise, improving cardiorespiratory and musculoskeletal function, aerobic capacity with gains in quality of life, thus promoting self-care [1,4-5].

## METHOD

The starting question that guided this investigation was: What is the impact of a respiratory rehabilitation program on Self-Care Hygiene, dressing/undressing and walking?

This study included people with chronic respiratory disease admitted to a respiratory rehabilitation program in the Kinesitherapy and Respiratory Rehabilitation Sector of the Centro Hospitalar de São João.

Inclusion criteria were considered to be over 18 years-old, communicational ability, not to be incapable of practicing physical exercise or severe cognitive impairment, and the exclusion criteria used were non-compliance with the respiratory rehabilitation program, and hypoxia induced by effort refractory to oxygen.

This study was conducted in accordance with the required ethical imperatives, having been guaranteed all deontological assumptions inherent to the ethics of the investigation.

### Study Design

It is a quasi-experimental study, in which the respiratory rehabilitation program (table 1) lasted 13 weeks, 3 times a week with sessions of high intensity exercise training and respiratory functional re-education whenever indicated, especially mobilization and secretions drainage. In addition to the physical component, it also included an educational component.

The impact of the respiratory rehabilitation program on the studied self-care was assessed using the London Chest Activity of Daily Living (LCADL) questionnaire, which assesses the effect of dyspnea on activities of daily living, in the answers to the questions "Bathing" and "Washing the head", for hygiene self-care,"Dressing the upper part of the torso" and "Putting on shoes and/or socks" for Dressing/Undressing self-care, and in relation to Walking self-care:" Walking at home "and" Going up stairs ". Variations after clinical intervention equal to or greater than 2 points in the answer to each question reflect clinical improvement [6-8].

***Table 1**: Respiratory Rehabilitation Program*

| RESPIRATORY REHABILITATION PROGRAM | |
|---|---|
| **PHYSICAL COMPONENT** | **EDUCATIONAL COMPONENT** |
| *Muscle Strength Training (30 minutes)* | *Educational session (60 minutes)* |
| Upper limbs<br>• Bicipede<br>• Tricipede<br>• Deltoide<br><br>Lower limbs<br>• Quadricipede<br>• Hamstring<br>• Twin<br>• Large breastplate<br>• • Great dorsal | • Changes in the Respiratory Process<br>• Benefits of physical exercise and the maintenance of regular physical activity<br>• Management of the therapeutic regimen<br>• Inhalation therapy<br>• Oxygen therapy<br>• Energy Conservation Techniques<br>• Controlled ventilation techniques<br>• Prevention and early treatment of exacerbations |
| *Endurance training (30 minutes)*<br>• Upper and lower limb cycle ergometer. | |
| *Functional Respiratory* | |

| | |
|---|---|
| *Re-education (SOS).* | |

### Sample

The sampling technique used was non-probabilistic for convenience and consisted of people with chronic respiratory disease who completed the respiratory rehabilitation program.

### Statistical analysis

The Statistical analysis was performed using the IBM® SPSS® Statistics version 23.0 program. All data were expressed with median values with a level of statistical significance of 0.05 for all statistical tests.

The statistical treatment was performed using a non-parametric test for 2 related samples due to the small sample size (Wilcoxon signed-rank test).

## RESULTS

The study included 38 people (71.9% men) with a median age of 67 years-old (± 15.6 years-old) with FEV1% median of 39.51% (table 2).

Regarding Self-Care Hygiene, Dressing/Undressing and Walking, there was a statistically significant improvement (p <0.001) in all questions formulated with a median variation of 2 points in the LCADL (except for the question "Putting on shoes and/or socks" on those the variation was 1 point).

In all studied self-care, there was a clinically significant improvement. (Table 3).

***Table 3**: Results related to Hygiene, Walking and Dressing/Undressing Self-Care*

| London Chest Activity of Daily Living (LCADL) Scale | | | | |
|---|---|---|---|---|
| | Before | After | Value p | Variation |
| **Hygiene Self-care** | | | | |
| *To have a bath* | | | | |
| Median | 3 | 1 | 0,000* | 2** |
| Interquartil 25-75 | 2-3 | 1-2 | | |
| *To wash their head* | | | | |
| Median | 3 | 1 | 0,000* | 2** |
| Interquartil 25-75 | 2-3 | 1-2 | | |
| **Walking Self-care** | | | | |
| *Walking at home* | | | | |
| Median | 3 | 1 | 0,000* | 2** |
| Interquartil 25-75 | 2-3 | 1-2 | | |
| **Climbing the stairs** | | | | |
| Median | 3 | 1 | 0,000* | 2** |
| Interquartil 25-75 | 2-3 | 1-2 | | |
| **Dressing/undressing Self-care** | | | | |
| *Dressing the upper torso* | | | | |
| Median | 3 | 1 | 0,000* | 2** |
| Interquartil 25-75 | 2-3 | 1-2 | | |
| *Putting on shoes / socks* | | | | |
| Median | 2 | 1 | 0,000* | 1 |
| Interquartil 25-75 | 2-3 | 1-2 | | |

* statistically ** clinically significant

***Table 2**: Sample characterization*

| | | |
|---|---|---|
| **N** | | **38** |
| *Gender* | Male | 28 |
| | Female | 10 |
| Age (median) | | 67 years-old |
| FEV1% (median) | | 39,51% |
| Residual volume (median) | | 200 |
| ***Diagnostics*** | DPOC | 25 |
| | Bronchiectasis | 10 |
| | Cystic Fibrosis | 3 |
| Six-minute Walk Test Initial minutes | | 320,8 meters |

## DISCUSSION

This study aimed to assess the impact of a respiratory rehabilitation program on hygiene, walking and dressing/undressing self-care.

Approximately 40% of people with CRD report disability in activities of daily living (ADL) and 68% lose the ability to perform at least one relevant ADL due to dyspnea and muscle fatigue [8-9].

For Velloso et al. [10] during ADL tasks that frequently involve the use of upper limbs repeatedly or shoulder flexion above 90 degrees are frequently affected due to the use of accessory muscles of breathing.

Miravitlles et al. [11] established a direct relationship between daily walking time and functional status, confirming that muscle deconditioning and poor health status are factors that contribute to the reduction in walking time.

In fact, compared to healthy people, the time taken to perform ADL is longer and causes a significant increase in dyspnea due to the lack of ventilatory reserve, decreased inspiratory reserve volume, dynamic hyperinflation and increased oxygen consumption, changes so far attributed only to people with COPD but present in other chronic respiratory diseases. [4]

Spruit et al. [4] in the latest guidelines for respiratory rehabilitation relates physical inactivity with increased dyspnea, corroborated by Pitta et al. [12] which established a positive correlation between dyspnea (assessed by the mMRC scale) and physical inactivity.

In this sense, the impact of dyspnea on the performance of ADL and therefore on self-care should be lesf to description as possible [13-14], with the option for the LCADL Questionnaire to the detriment of the mMRC scale being quite consensual since it has a degree of specification much larger, it is a valid and robust instrument and is sensitive to different

therapeutic approaches such as respiratory rehabilitation [8,15].

Garrod et al. [13] in a sample of 59 people with CRD who underwent a 6-week PRP proved that there was a reduction in the impact of dyspnea on all LCADL issues including those related to Hygiene, dressing/undressing and walking self-care.

Muller et al. [16] found the same results in a sample of 26 people with CRD on a list for lung transplantation.

Sciriha et al. [17] in an 8-week respiratory rehabilitation program that included training of the inspiratory muscles and muscle strengthening of the upper limbs, concluded that when people with COPD perform unsupported activities of the upper limbs, such as in ADL, there is contraction of the accessory muscles of breathing together with passive stretching of the thoracic grid. This fact leads to a loss of effectiveness of the accessory muscles of breathing with the consequent increase in respiratory rate and the establishment of inadequate response patterns, progressing to dyspnea. Strengthening the muscles of the upper limbs in terms of muscle strength and endurance prevents this phenomenon and helps people to adopt adequate breathing patterns, reducing dyspnea.

Our sample consists of people with severe obstruction (FEV1% 39.41%), with hyperinflation and with significant inability to perform ADL that involve the use of upper and lower limbs, as is the case with hygiene, dressing and undressing, and walking self-care.

In our investigation, clinical gains occurred in all studied self-care (except in the question "Putting on shoes / socks"), which goes against the state of the art.

The median differential of the 6-minute walking test, performed at the beginning and at the end of the respiratory rehabilitation program to objectify the functional capacity, was 40.03 meters, higher than the minimum clinically significant distance.

## CONCLUSION

This study concluded that this respiratory rehabilitation program increased tolerance to activity, reduced dyspnea thus improving functional independence for hygiene, dressing/undressing and walking Self-Care, assessed by the London Chest Activity of Daily Living Scale in people with illness chronic respiratory.

It is now commonly accepted that increased physical activity and exercise training can decrease dyspnea in people with CRD [4-5,11,19], we cannot (and should not) forget the fundamental role that education, always with objective of behavioral change, represents in the reduction of dyspnea, in the increase tolerance to effort and in the management of daily energy.

As the object of the Nursing discipline is the human responses to the different transitions experienced throughout life and with chronic respiratory diseases becoming more and more frequent and disabling, the conclusions of this study are fundamental to the daily practice of rehabilitation nurses in the promotion of self-care.

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