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To cite this article: MJW Endrian *et al* 2019 *J. Phys.: Conf. Ser.* **1179** 012148

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# The Effect of Pursed Lips Breathing Technique on Increasing Peak Expiratory Flow Rate (PEFR) in Medium Classification of Chronic Obstructive Pulmonary Disease Patients

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**Abstract** . Chronic Obstructive Pulmonary Disease (COPD) is a chronic disease that attacks the respiratory system caused by inflammation and pollutants that are sucked in the respiratory tract which will cause bronchial stiffness resulting in dyspnea or gasping breath. West Java itself has a prevalence of 3% including Ciamis. Dyspnea will reduce the ability of lung physiology which is marked by a decrease of peak expiratory flow rate <150 L which will eventually cause the death. The purpose of this study is to reduce dyspnea in COPD patients seen from the increase of PEFr. The sample of this study was 25 medium classifications of COPD patients who were given the technique of Purse Lips Breathing 2 times a day in 7 days. The method of this research is one group pre-post test design with a sample of 25 COPD patients. The results of the study were tested by paired T-test where the results showed a P value of 0.00 < 0.05, which means that there was a clear and significant increase in PEFr after given the Pursed lips breathing technique. Discussion of increasing PEFr requires consistency of COPD patients so that complementary therapy or even collaboration can be used to reduce dyspnea symptoms. As the conclusion, the increase of PEFr as a sign of reducing dyspnea does not stand alone but requiring a comprehensive examination, it can be used as the first measure of emergency breathing.

## 1. Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a respiratory disease caused by inflammation, pollutants, which takes a long time [1]. Many undetectable COPD diseases are caused by symptoms that are considered easy, so many people do not treat them when new symptoms appear. Symptoms in COPD are mild VEP > 80%, medium 30-80% and weight > 30% [2]. COPD sufferers experience complaints of dyspnea or gasping breath caused by narrowing of the bronchi in the respiratory tract due to inflammation, aging, and pollutants. Gasping breath has a tremendous impact on COPD patients which will reduce the quality of life and even death if it is less than > 150 L [1].

Dyspnea disease is a clinical symptom that must be treated medically. The treatment using bronchodilators is still the main choice to treat the inflammation. Complementary therapy is also



needed to provide independence for sufferers without using medication. It uses deep breathing exercises, Pursed Lips Breathing (PLB), it will provide more quality of life in COPD patients[3]

Pursed lips breathing therapy will provide physiological training and provide relaxation impact in COPD patients[4]. The aim of the study was to reduce dyspnea by using PLB seen from the measurement results of Peak Expiratory Flow Rate (PEFR).

**2. Methods**

This study used the one group pre-post test design method, it was conducted in Ciamis Public Hospital in the pulmonary outpatient room. The correspondents of this study were COPD patients who were treated. The samples of this study were 25 COPD patients who had limitation characteristics of medium classification COPD where gasping breath appeared if doing the activities, the Peak Expiration Flow Rate value was in the yellow color, namely VEP 30-80%. The first instrument used was an approval sheet containing sample availability following the study, a questionnaire sheet containing characteristics of the respondents, namely age, gender, education, and employment. 5 specific questions regarding asthma, history of lung disease, smoking habits, heart disease, and height. The measurement results in this study are using a peak flow meter tool to measure the Peak Expiration Flow Rate. Then, people with COPD who have fulfilled the inclusion criteria are followed up to home. After arriving at home, sample of PEFR was measured by using a peak flow meter and then trained to breathe by pursed lips breathing for 2 times a day in 7 days. Then it analyzed by using a paired t-test to see the effect on the PEFR value where the PRE PEFR value of first day was compared with the 7th POST PEFR value. The procedure stages of pursed lips breathing in this study were 1) the patient sat upright in the chair then relaxed shoulder as much as possible, 2) Inhale 2 seconds then feel the chest until it expands and the stomach feels air flowing, 3) breathe out of the mouth with lips pursed [5].

**3. Results and Discussion**

• **Respondents Characteristics of Univariate**

**Table 1.** Characteristics of respondents based on gender

Gender	F	%
Male	24	96
Female	1	4
<b>Total</b>	<b>25</b>	<b>100</b>

Based on table 1 most respondents were male 24% and female 1%.

**Table 2.** based on Age

N	Mi	Ma	Mea	SD
	n	x	n	
2	21	55	32.4	9,59
5			8	2

Table 2 shows the age of those who have medium COPD for those 21 years old who are the oldest 55%, the average age of the correspondent is 32 years with a standard deviation 9,592.

**Table 3.** Based on the educational

<b>Latest Education</b>	<b>F</b>	<b>%</b>
Elementary school	1	4
Junior High School	2	8
Senior High school	18	72
Diploma I	1	4
Diploma III	3	12
<b>Total</b>	<b>25</b>	<b>100</b>

The majority of education in respondents is senior high school graduates, they are 18 correspondents around 72%, higher education and the diploma is 12% of the sample

**Table 4.** Based

<b>Jobs</b>	<b>F</b>	<b>%</b>
Labor	1	4
PNS / TNI / Polri	5	20
Private Employees	3	12
Entrepreneur	5	20
Not Working	3	12
Take cares of household	1	4
Pensionary	7	28
<b>Total</b>	<b>25</b>	<b>100</b>

Respondents who suffer a lot based on the job is pensionary as many as 7 people, 28% correspondents.

• **Bivariate**

Table 5 Based on Paired t-test

<b>variable</b>	<b>Intervention</b>	<b>Mean</b>	<b>SD</b>	<b>PValue</b>
PEFR	Before	411	126	0,000
	After	522	99	

Based on table 5 there is a significant difference between before and after treatment where PEFR average increases and significance value between the first day and post day/ the seventh day experienced a significant difference proved by p-value <0.05.

## • Discussion

The results showed differences between before and after pursed lips breathing therapy in medium classification of COPD patients which means that it has an influence on increasing PEFr that is evidenced by P-value  $<0.05$ . Pursed lips breathing provide exercise in breathing muscles, lung capacity, oxygenation and muscle relaxation [6]. When COPD patients are trained PLB, they feel the air intake that fills the lungs feels full and has a relaxing effect. Pathophysiologically, PLB training has a significant impact on increasing lung capacity and respiratory muscle strength. This therapy is carried out within 7 days and has a good impact, it is possible that if it done routinely it will provide independence in handling dyspnea without depending on bronchodilator drugs.

PLB is different from Slow Deep Breathing (SDB), PLB is more successful in increasing PEFr than SLB. Because SLB is more significant for breathing relaxation [1]. Some literacy shows that men are more dominant than women in COPD sufferers, including in this study, men tend to be more dominant because they are more related to smoking behavior which tends to be identical to men. While smoking is one of the causes of COPD [2]. Aging is a factor that is not ruled out because from average age of 32 years and above it is only COPD, and work is also an average retiree which means that aging has a significant role in COPD disease [4]. Some literacy has not been able to ensure that PLB is a good method of reducing shortness of breath and stabilizing breathing because there are still weaknesses in the research method [3]. So that in the future the PLB method itself does not stand alone, especially in the clinical domain because it needs to require a deeper study and remains a complementary therapy that needs to be combined with medical therapy. Not only focused on PEFr but on oxygenation to improve perfusion at the cellular level, PLB has a significant impact [5].

## 4. Conclusion

PLB can increase PEFr significantly but dyspnea sometimes appears quickly and sometimes becomes a serious condition. PEFr as an indicator of decreased pulmonary ability can be increased by PLB, but in practice PLB cannot stand alone, it must be assisted with other medical therapies, especially bronchodilators, especially in emergency situations. But if the patient's condition is stable, PLB can be used as an initial measure to control breathlessness or dyspnea.

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