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Ballons And Buteyko Blowing Exercises Against Peak Current Expiration Of Asthma Patients

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ABSTRACT

Asthma is becoming a serious global health problem and needs to be addressed. Many asthmatics from various countries experience asthma disorders, so if it is not controlled, it can increase the morbidity rate. One way to assess the occurrence of asthma is to conduct an Expiratory Peak Current (APE) assessment. Do Buteyko breath exercises and Blowing Balloons to overcome and alleviate asthma symptoms. This study aimed to compare Buteyko's breath exercises with Blowing Balloons exercises against changes in peak expiratory currents in asthma patients. The research design used was quasi-experimental with pretest and post-test methods in two groups. The study sample of 20 respondents consisted of 2 groups, namely 10 respondents of the Buteyko breath exercise group and 10 respondents of the Blowing Balloons exercise group, with a simple random sampling technique. After Buteyko breath training and Blowing Balloons exercises were carried out 2 times a day for two weeks, the Wilcoxon sign rank test results for Buteyko breath training and Blowing Balloons exercises with a value of p = 0.00 were obtained. The results of the Mann withney test showed no difference in the mean rank of the asthma control test (ACT) score in Buteyko's breath exercise and Blowing Balloons exercise p = 0.21. The results of measuring the expiratory peak current (APE) showed a significant difference with the p-value = 0.00 in Buteyko breath exercises and Blowing Balloons exercises. Based on the study's results, it can be concluded that Buteyko's breath exercises and Blowing Balloons exercise positively impact the management of asthma symptoms. The results of this study can be an input for nursing services to be used as a guideline for developing Buteyko's breath exercises by blowing balloons against peak expiratory currents in asthma patients integrated into the provision of nursing care.

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1. Introduction

However, there are hundreds of reports of the prevalence of asthma in very different populations due to the lack of a proper definition of asthma that is universally acceptable—a comparison of the actual majority of reports from other parts of the world. The global prevalence of asthma ranges from 1 to 16% of the population in different countries.

There is strong evidence that the difference in the prevalence of asthma among children has decreased in recent decades. Most symptoms have declined in Western Europe and are increasing in regions where the majority was previously low. The prevalence of asthma symptoms in Africa, Latin America, Eastern Europe, and Asia continues to grow.

The World Health Organization Global Burden of Disease Study estimates that 13.8 million experience disability (impairing productivity and quality of life). Asthma represents 1.8% of the total global disease burden. It is estimated that asthma causes 346,000 deaths worldwide each year. According to the RISKESDAS survey (2013), asthma in Indonesia is among the top ten morbidity and mortality causes.

One way to assess the occurrence of asthma is to conduct an expiratory peak current (APE) assessment. The APE score is obtained from a simple examination using a peak flow meter. The PEF meter tool is easy to use or understand by doctors and patients. It is recommended that patients at home use daily activities to monitor their

asthma condition. Lack of monitoring of asthma by sufferers can increase the risk of asthma attacks and ineffective treatment (Indonesian Association of Pulmonary Doctors, 2010).

The Buteyko method is a breathing exercise system and was first developed in 1950 to recondition breathing patterns using breath control and holding breath, connecting with hyperventilation processes and low carbon dioxide levels. Buteyko showed increased evidence that reducing ventilation can be beneficial for many patients with asthma disorders.

In addition to the Buteyko method, there is also a therapy that can overcome asthma: Blowing Balloons exercise therapy, better known as balloon blowing therapy. This therapy is a cost-effective treatment and can improve respiration status in patients with respiratory distress. This therapy can also reduce drug use, lower the treatment dose, enhance the quality of life, and reduce the risk of respiratory disorders (1).

Research on managing Buteyko's breathing exercises in asthma patients has been widely carried out. Research conducted by (1) showed that the results of this study had a good influence on asthma patients. Significantly decrease the recurrence and severity of the main symptoms of asthma (nocturnal asthma, morning symptoms, limitation of activity, shortness of breath, wheezing, prediction of PEFR (Peak Expiratory Flow Rate), and the use of inhaled corticosteroids).

And it significantly increases PEFR. Buteyko breath exercises can improve the patient's level of function and lung capacity to live independently by lowering the severity of asthma. (2) The study results of 100 newly diagnosed asthma respondents. In the age group of 31 to 40, asthma control increased and improved lung function at peak expiratory current levels.

Research conducted (3) on blowing balloons. The results showed that there was an increase in oxygen saturation, blood pressure, pulse frequency, and respiratory frequency before and after being given the intervention for 3 days and 7 days on the variables of saturation, pulse frequency, and respiratory frequency on the third day, and all variables measured on the seventh day.

Breathing relaxation using the Blowing Balloons technique can increase oxygen saturation and reduce physiological changes in the anxiety of COPD patients, as seen by changes in blood pressure, pulse frequency, and breath frequency. They were blowing Ballons. The results showed that the pre-intervention mean value was 27.0 with a standard deviation of 4.61; in post-test I, the mean value was 22.2 with a standard deviation of 5.78. In post-test II, the average value was 16.2 with a standard deviation of about 0.752 with a p-value of < 0.05.

The study's results stated that Blowing Balloons exercises positively impact the breathing patterns of children with asthma.

2. Method

The quantitative research design used in this study was quasi-experimental with pretest and post-test methods in two groups (two-group pretest-posttest design) is a study that manipulates independent variables with two interventions. In this study, respondents were given a pretest, and an expiratory peak current (APE) examination using a peak flow meter was carried out before treatment. After treatment of the respondent (Posttest), the expiratory peak current was re-assessed to see the difference in expiratory peak current between the two interventions. The treatment given to respondents was Buteyko breath exercises and Blowing Balloons. The design of this study used two groups of research interventions in the form of Buteyko breath exercises and Blowing Balloons which aimed to see the difference in Expiratory Peak Current (APE) that occurred before and after the intervention in the two intervention groups.

3. Result and Discussion

Table 1 Characteristics

No	Characteristics of Respondents	Buteyko		Blowing Balloons	
		f	%	f	%
	Age				
1	18-40	5	25.00	12	60.00
	41-60	15	75.00	8	40.00
	Gender				
2	Man	9	45.00	6	30.00
	Woman	11	55.00	14	70.00
	Education				
3	Primary school	4	20.00	1	5.00
	Junior School	5	25.00	4	20.00
	Senior High School	9	45.00	12	60.00

	College	2	10.00	3	15.00
	Job				
4	Housewives	8	40.00	6	30.00
	Self-employed	4	20.00	5	25.00
	Civil servants	3	15.00	1	5.00
	Laborer	2	10.00	5	25.00
	Private Employees	1	5.00	3	15.00
	Not Working Yet	1	5.00	0	0.00
	Pension	1	5.00	0	0.00
	Body Mass Index				
5	Skinny Weight (<17 Kg/m²)	1	5.00	0	0.00
	Skinny Weight (17-18,5 Kg/m²)	2	10.00	0	0.00
	Usual (18,6-25 Kg/M²)	9	45.00	8	40.00
	Light Grease (25,1-27 Kg/M²)	3	15.00	6	30.00
	Heavy Grease (>27 Kg/m²)	5	25.00	6	30.00
	History of Smoking				
6	Yes	9	45.00	6	30.00
	Not	11	55.00	14	70.00
	Family History with Asthma				
7	Yes	14	70.00	13	65.00
	Not	6	30.00	7	35.00
	Degree of Asthma				
8	Partially Controlled	19	95.00	17	85.00
	Fully Controlled	1	5.00	3	15.00

Five were Buteyka respondents in the early adulthood category (25.00%), and middle adulthood 15 respondents (75.00%).

In the Blowing Ballons group in the early adult category of 12 respondents (60.00%), middle adulthood, 8 respondents (40.00%), and according to gender, the number of women in the Buteyko breathing exercise group was 11 people (55.00%). The number of female Blowing Ballons training respondents was 14 (70.00%). The number of male respondents in the Buteyko breathing exercise was 9 people (45.00%). The Blowing Balloon exercise group was 6 people (30.00%), with the highest education achievements in the Buteyko group. There were 9 high school students (45.00%) and 12 high school students (60.00%) in the Blowing Ballons group.

The highest working rate in the Buteyko breathing exercise group was IRT of 8 people (40.00%); in the Blowing Ballons training group, there were 6 IRT (30.00%). The body mass index of the Buteyko Breathing Exercise Group is average. Standard (18.6-25 Kg/m2) as many as 9 people (45.00%) and blowing ballons training group as many as 8 people (40.00%). 9 people (45.00%) and the Blowing Balloons group will be 6 people (30.00%).

Based on a family history of illness, there were 14 respondents in the Buteyko group with a family history of asthma (70.00%) and 13 respondents in the Blowing Balloons exercise group (65.00%). Based on the degree of asthma in the Buteyko group, 19 people (95.00%) had partially controlled asthma, and 1 person had fully controlled asthma (5.00%). For the Blowing Balloons group, 17 subjects had somewhat controlled asthma (85.00%) and 3 fully managed asthma subjects (15.00%).

Analysis

Table 2 Relationship of Body Mass Index (BMI) Value to ACT Intervention Value of Buteyko Breath Exercise (n=20)

Nilai ACT	Category	Degree of Asthma		F
		Partially Controlled	Fully Controlled	
Pretest	Thin Weight (<17 Kg/m²)	1	0	1
	Light Skinny (17-18.5 Kg/m²)	2	0	2
	Normal (18.6-25 Kg/M²)	7	1	8
	Light Fat (25.1-27 Kg/M²)	4	0	4
	Heavy Fat (>27 Kg/m²)	5	0	5
Posttest	Thin Weight (<17 Kg/m²)	1	0	1
	Light Skinny (17-18.5 Kg/m²)	2	0	2
	Normal (18.6-25 Kg/M²)	7	1	8
	Light Fat (25.1-27 Kg/M²)	3	1	4
	Heavy Fat (>27 Kg/m²)	5	0	5

Table 2 shows asthma patients who measured act pretest values (Buteyko breath exercises) were highest by normal BMI (18.6-25 Kg/m2), as many as 7 respondents with partially controlled asthma degrees, and 1 respondent with fully managed asthma degrees. Asthma patients who measured the highest ACT post-test value by normal BMI (18.6-25 Kg/m2), as many as 7 respondents with partially controlled asthma degrees, and 1 respondent with fully managed asthma degrees with a normal BMI (18.6-25 Kg/m2) and 1 light fat BMI respondent (25.1-27 Kg/m2).

Table 3. Relationship of BMI Value to ACT Pretest Value and Posttest Intervention Blowing Balloons (n =20).

ACT value	Category	Degree of Asthma		
		Partially Controlled	Fully Controlled	F
Pretest	Thin Weight (<17 Kg/m²)	0	0	0
	Light Skinny (17-18.5 Kg/m²) Normal	0	0	0
	(18.6-25 Kg/M²)	7	1	8
	Light Fat (25.1-27 Kg/M²)	6	1	7
	Heavy Fat (>27 Kg/m²)	4	1	5
Posttest	Thin Weight (<17 Kg/m²)	0	0	0
	Light Skinny (17-18.5 Kg/m²) Normal	0	0	0
	(18.6-25 Kg/M²)	7	1	8
	Light Fat (25.1-27 Kg/M²)	6	1	7
	Heavy Fat (>27 Kg/m²)	4	1	5

Based on table 3 above, asthma patients who measured the highest ACT pretest (Blowing Balloons exercise) values by normal BMI (18.6-25 Kg/m2), as many as 7 respondents with partially controlled asthma degrees and 1 respondent with fully managed asthma degrees, Mild Fat (25.1-27 Kg/m2) 1 respondent fully controlled, 1 severely fat respondent (>27 Kg/m2) with a degree of fully controlled asthma. Asthma patients who measured the act post-test value (Blowing Balloons exercise) highest by normal BMI (18.6-25 Kg/m2) as many as 7 respondents with partial controlled asthma degrees and 1 respondent with fully managed asthma degrees, Mild Fat (25.1-27 Kg/m2) fully controlled respondents, 1 Severe Fat respondent (>27 Kg/m2) with a fully controlled asthma degree.

Table 4. relationship of Smoking History to ACT Pretest and post-test Values of Buteyko Breath Exercise Intervention (n=20)

History of Smoking	Category	Degree of Asthma		
		Partially Controlled	Partially Controlled	F
Pretest	Yes	6	1	7
	Not	13	0	13
Posttest	Yes	6	1	7
	Not	12	1	13

Based on table 4 above, asthma patients who measured the highest ACT pretest (Buteyko breath exercise) scores who did not have a history of smoking were 13 respondents with partially controlled asthma degrees and 1 respondent with a fully managed asthma degree who had a history of smoking. Asthma patients who measured the highest non-smoking ACT post-test (Buteyko breath exercise) scores were 12 respondents with a degree of controlled asthma and 1 respondent with a degree of controlled asthma with a history of smoking, and 1 respondent with no history of tobacco.

Table 5. Relationship of Smoking History with ACT Pretest and post-test Values of Exercise Blowing Balloons Interventions (n=20).

History of Smoking	Category	Degree of Asthma		
		Partially Controlled	Fully Controlled	F
Pretest	Yes	5	1	6
	Not	12	2	14
Posttest	Yes	5	1	6
	Not	12	2	14

Based on table 5, asthma patients who measured the highest ACT pretest (Blowing Balloons breath exercise) scores who did not have a smoking history were 12 respondents with partially controlled asthma degrees and 2 with fully managed asthma degrees or had no history of smoking. Asthma patients who measured the highest ACT post-test (Blowing Balloons breath exercise) scores with a history of not smoking were 12 respondents with partially controlled asthma degrees and 2 with fully managed asthma degrees with no smoking history. Description of Peak Expiratory Flow (APE) and Asthma Control Test (ACT) before and after tests in asthma patients.

Table 6. Description of Peak Expiratory Flow (APE) and Asthma Control Test (ACT) before and after tests in asthma patients (n=20)

Intervention	Pretest		Posttest	
	Mean	SD	Mean	SD
APE				
Buteyko	4,86	1,27	5,13	1,21
Blowing Balloons	22,37	97,44	6,02	1,08
ACT				
Buteyko	19,08	1,34	20,67	1,35
Blowing Balloons	19,18	1,54	20,50	1,51

Showed APE and ACT scores in both intervention groups (Buteyko breathing exercises and Balloons Blowing activities) during the pre-test and post-test periods. In the pretest period of the Buteyko breathing exercise group, an average APE score of 4.86 and an ACT score of 19.08 were obtained. Meanwhile, in the pre-balloon training group, the average APE score was 22.37, and the ACT score was 19.18. Meanwhile, in the post-test period for the Buteyko respiratory group, the average APE score was 5.13, and the ACT score was 20.67. Meanwhile, the post-test balloon exercise group had an average APE score of 6.02 and an ACT score of 20.50.
Table 7. Differences in the act and APE pretest and post-test values performed on Buteyko breathing exercises and Blowing Balloons

Uji Wilcoxon Sign Rank test								
Buteyko Group				Group Blowing Balloons			
ACT		APE		ACT		APE	
Pretests (P Value	Posttest (P Value	Pretests (P Value	Posttest (P Value	Pretests (P Value	Posttest (P Value	Pretests (P Value	Posttest (P Value
0,00		0,00		0,00		0,00	

Table 7 shows the results of a statistical test with the Wilcoxon Sign Rank test, which shows a difference between the Buteyko Breathing intervention and the blowing intervention on the ACT change. and the APE value (p = 0.00)

Table 8. Differences in the VALUE of ACT Buteyko Breath Exercises and Blowing Balloons Exercises

Intervention	N	Mean Rank	P Value
Buteyko Breath Exercises	20	38,09	
Balloons Blowing Exercises	20	32,71	0,11

Table 8 compares the ACT values of the Buteyko breathing exercise group with the balloons blowing exercise test with the Mann-Whitney U test. Based on the test, the average value of Buteyko's breathing exercises was 38.09, the balloons blowing exercises were 32.81, and the p-value was 0.11. means there is no statistical difference.

Table 9. The difference in APE value from Buteyko breathing exercises and Blowing Balloons exercises

Intervention	N	Mean Rank	P Value
Buteyko Breath Exercises	20	28,44	
Latihan Blowing Balloons	35	42,36	0,00

Table 9 can be seen by comparing the difference in the APE values of the Buteyko breathing exercise group with the exercises for the inflation balloon test with the Mann-Whitney U test. Based on this test, it was found that the average value of Buteyka's breathing exercises was 28.44, and the balloon inflating exercises was 42.36. The p value was 0.00, which means there is a big difference.

Discussion

Relationship of Body Mass Index (BMI) Value with ACT Value of Buteyko Breath Exercise Intervention

In asthma patients who measured the act pretest value (Buteyko breath exercise) highest by an average BMI of 18.6-25 kg/m2, as many as 7 respondents with a degree of partially controlled asthma and 1 respondent with a degree of fully controlled asthma. Asthma patients who measured the highest ACT post-test value by a typical BMI of 18.6-25 kg/m2 were 7 respondents with a partially controlled degree of asthma and 1 respondent with a

fully managed asthma degree with a typical BMI of 18.6-25 kg/m2 and 1 respondent of a Mild Fat BMI of 25.1-27 kg/m2.

Relationship of Body Mass Index (BMI) Value with ACT Value of Blowing Balloons Exercise Intervention

Asthma patients who measured the act pretest value (Blowing Balloons exercise) highest by a typical BMI of 18.6-25 kg/m2 as many as 7 respondents with a degree of partially controlled asthma and 1 respondent with 1 degree of fully controlled asthma, Light Fat 25.1-27 kg/m2 1 respondent fully controlled, 1 respondent Fat Weight >27 kg/m2 with a degree of fully controlled asthma. Asthma patients who measured the act post-test value (Blowing Balloons exercise) highest by a typical BMI of 18.6-25 kg/m2 as many as 7 respondents with a degree of partially controlled asthma and 1 respondent with a degree of fully controlled asthma, Light Fat 25.1-27 kg/m2 1 respondent fully controlled, 1 respondent Fat Weight >27 kg/m2 with a degree of fully controlled asthma.

Relationship of Smoking History to ACT Values of Buteyko Breath Exercise Intervention

Asthma patients who measured the highest ACT pretest (Buteyko breath exercise) scores with no smoking history were 13 respondents with partially controlled asthma degrees and 1 with a fully controlled asthma degree with a history of smoking. Asthma patients who took the highest act post-test (Buteyko breath exercise) scores without a smoking history were 12 respondents with controlled asthma levels, 1 with complete control had a history of smoking, and 1 with no history of tobacco.

Association of smoking history of ACT scores with Intervention exercise Breath Blowing Balloons

In asthma patients who measured the highest ACT pretest (Blowing Balloons breath exercise) scores who did not have a history of smoking, as many as 12 respondents with a degree of partially controlled asthma and 2 respondents with a degree of fully controlled asthma or had no history of tobacco. Asthma patients who measured the highest ACT post-test (Blowing Balloons breath exercise) scores with a history of not smoking were 12 respondents with partially controlled asthma degrees and 2 with fully managed asthma degrees with no smoking history.

ACT Scores Before and After Buteyko Breath Exercises

ACT scores in Asthmatics Who Performed Buteyko Breathing Exercises Before and Before Buteyko Breathing Exercises showed changes in ACT values. In the group before the intervention, the average ACT score from the Wilcoxon test was $p = 0.00$, While the average ACT value after the intervention was $p = 0.00$.

The intervention performed was Buteyko breathing exercises performed twice a day for two weeks with controlled asthma conditions showing an increase in the average value for the intervention, and the results showed significant results. The data showed that the interventions carried out in the Buteyko breathing exercise group affected the increase in ACT values, confirmed by Wilcoxon statistics with $p = 0.00$ ($p< 0.05$). It can be concluded that there are differences in the ACT values of asthma patients before and after Buteyko breath therapy.

According to the study conducted on (1), the results of this study had a positive effect on asthma patients. It is essential to reduce the recurrence and severity of the main symptoms of asthma (nocturnal asthma, morning symptoms, limitation of activity, shortness of breath, wheezing, breathing exercises Buteyko can improve the level of lung function and the patient's ability to live independently by reducing the severity Buteyko presents more and more evidence that reduced ventilation can be beneficial for many patients with asthma disease (2)

Act scores help monitor asthma status with controlled and uncontrolled conditions. According to (3), poor asthma control can lead to errors in inhaler therapy, compliance, environment, and consideration of alternative diagnoses. Repeated visits to health services, such as health centers or hospitals, every six months or less are recommended to monitor asthma prevention. One that may show symptoms of poor asthma control (e.g., dyspnea or nocturnal cough, increased use of beta-agonists, short-acting inhalers, and regular health care to relieve asthma symptoms) may improve therapy. When asthma symptoms are under control, the bronchi become smoother, more unlimited, and smoother air flow (3).

APE Scores Before and After Buteyko Breath Exercises

APE values in asthma patients who performed Buteyko breath exercises before and after the Buteyko breath exercises showed a significant change in APE values, the group before the intervention, the APE score was $p = 0.00$. Meanwhile, the average ACT value after the intervention was $p = 0.00$.

The intervention, namely Buteyko breathing exercises performed twice a day for two weeks with controlled asthma, showed a significant increase in the average value before the intervention. This suggests that the actions performed by the Buteyko group with respiratory intervention resulted in an increase in APE, which was directly confirmed by Wilcoxon test statistics with $p = 0.00$ ($p<0.05$) to conclude that there was a difference in APE. Grades in patients with asthma before and before the procedure. They were conducting Buteyko respiratory exercise therapy.

This study is in line with study (5) on 100 respondents with newly diagnosed asthma. In the age group of 31 to 40 years, there was an improvement in asthma control and lung function in terms of peak expiratory flow rate.

In biochemical analysis, Buteyko breath exercises can produce nitric oxide (NO), which functions as bronchodilation, vasodilation, tissue permeability, immune system, oxygen transport, insulin response, memory, and mood. The paranasal sinuses produce nitric oxide (NO). Taking a deep breath interspersed with holding your breath to stimulate hypoxia fluctuatingly can affect the willingness and function of NO (4). Diaphragm breathing can change the pressure in the thoracic cavity that produces air. In the inspiration phase, the dome is fragmented horizontally, and the rib cage is raised. Contractions of the diaphragm and external intercostal muscles pull the costume up and forward so that the transverse and anteroposterior diameters. Along with the increased chest volume, pulmonary alveolar pressure decreases, and the air is attracted to the lungs. The expanding thoracic cavity harms intrapleural pressure and will expand the lungs (5).

CT Scores Before and After Blowing Balloons Exercises

ACT values in asthma patients who performed Balloons Blowing exercises before and after the Balloons Blowing breath exercises showed changes in ACT values, the group before the intervention, the APE score was p = 0.00. Meanwhile, the average ACT value after the intervention was p = 0.00.

The intervention was a Blowing Balloons exercise performed twice a day for two weeks with controlled asthma status showing an increase in the average value before the intervention. This indicates that the actions performed on the Balloon Blowing exercise group affected the change in act values which was also statistically confirmed by the Wilcoxon test with p = 0.00 (p< 0.05), so it can be concluded that there is a difference. ACT scores in asthma patients. Before and after blowing balloons exercises.

A related research study in line with (6), which surveyed the effects of balloon inflation on smokers, found that balloon inflation can continuously improve lung function by increasing peak expiratory flow. Research conducted on (7) inflatable balloons revealed significant changes in oxygen saturation, blood pressure, heart rate, and respiratory rate before and after the 3-day and 7-day intervention in oxygen saturation, heart rate, and respiratory variables. The frequency on the third day and all variables were measured on the seventh day. Respiratory relaxation with the inflation balloon technique can increase oxygen saturation and decrease physiological changes in anxiety in COPD patients with changes in blood pressure, pulse, and respiratory frequency.

The study conducted by (8) is related to blowing balloons. The results showed that the pre-intervention mean value was 27.0 with a standard deviation of 4.61; in post-test I, the mean value was 22.2 with a standard deviation of 5.78. In post-test II, the average value was 16.2 with a standard deviation of about 0.752 with a p-value of < 0.05. The results of the study stated that blowing balloons exercises positively impact the breathing patterns of children with asthma.

APE Scores Before and After Blowing Balloons Exercises

APE values in asthma patients who performed Balloons Blowing exercises before and after the Balloons Blowing breath exercises showed changes in APE values, the group before the intervention, the APE score was p = 0.00. Meanwhile, the APE value after the intervention is carried out with p = 0.00.

The intervention was a Blowing Balloon exercise performed twice a day for two weeks with controlled asthma status showing an increase in the average value before treatment. The data showed that the interventions carried out in the Blowing Balloons exercise group affected changes in APE values which were also statistically confirmed with the Wilcoxon test with p=0.00 (p<0.05), so it can be concluded that there are differences in the amount of APE in asthma patients. Before and after the balloons blowing exercise therapy.

A simple exercise that can be done to increase lung capacity is to blow a balloon every day, according to (9) (10) (11). The balloon helps the intercostal muscles enlarge the diaphragm and ribs. This allows oxygen to be absorbed, replace chemicals still present in the lungs, and release carbon dioxide into the lungs. Blowing a balloon is a very effective exercise for developing the lungs. Effect on alveoli, balloon inflation facilitates the exchange of carbon dioxide and oxygen during inhalation (12). A lot of oxygen is supplied by the impact of balloon exercises. This exercise prevents shortness of breath and weakness because the oxygen entering the body energizes cells and muscles by removing carbon dioxide. Regular balloon bleeding of 10-15 balloons can increase lung capacity and respiratory muscles. In addition, this exercise is also beneficial for people who are overweight, stressed, and asthmatics.

The Difference Between Buteyko Breathing Exercises and Balloons Blowing Exercises

Based on the results of the Mann-Whitney test, the average ACT score of the Buteyko breathing exercise group was 38.19, and the balloon inflatable exercise group had an average score of 32.81 with p = 0.21. This means there is no significant difference between the ACT value of the Buteyko Breath Exercise intervention and the Blowing Balloon in asthma patients.

Based on the Mann-Whitney test results, the average APE value in the Buteyko breathing exercise group was 28.54 in the balloon training group, with an average value of 42.46 p = 0.00. In other words, there is a significant

difference between the APE values of Buteyko breathing exercises and Blowing Balloons exercises in asthma patients.

4. Conclusion

1. The study's results based on the Wilcoxon sign-rank test showed an increase in ACT and APE scores before performing Buteyko breathing exercises.
2. The study's results based on the Wilcoxon rank test showed an increase in ACT and APE scores when doing breathing exercises with inflation balloons.
3. The results of the Mann-Whitney test showed no difference in ACT scores between the Buteyko breathing exercise group and the bladder balloon exercise group.
4. Regarding the amount of APE, there was a significant difference between the Buteyko breathing exercise group and the bladder balloon exercise group.

References

1. Hassan ZM, Riad NM, Ahmed FH. Effect of Buteyko breathing technique on patients with bronchial asthma. Egypt J Chest Dis Tuberc. 2012;61(4):235–41.
2. Zul'Irfan M, Suza DE, Sitepu NF. Perbandingan latihan napas buteyko dan latihan blowing balloons terhadap perubahan arus puncak ekspirasi pada pasien asma. J Perawat Indones. 2019;3(2):93–100.
3. Sutrisna M, Pranggono EH, Kurniawan T. Pengaruh Teknik Pernapasan Buteyko Terhadap ACT (Asthma Control Test). J Keperawatan Silampari. 2018;1(2):47–61.
4. Bennett CL, Silver SM, Djulbegovic B, Samaras AT, Blau CA, Gleason KJ, et al. Venous thromboembolism and mortality associated with recombinant erythropoietin and darbepoetin administration for the treatment of cancer-associated anemia. Jama. 2008;299(8):914–24.
5. Hawks SA, Aguirre JC, Schelhas LT, Thompson RJ, Huber RC, Ferreira AS, et al. Comparing matched polymer: Fullerene solar cells made by solution-sequential processing and traditional blend casting: Nanoscale structure and device performance. J Phys Chem C. 2014;118(31):17413–25.
6. Kim J, Lee Y. Effects of a balloon-blowing exercise on lung function of young adult smokers. J Phys Ther Sci. 2012;24(6):531–4.
7. Tunik T, Rosa EM, Khoiriyati A. The Effectiveness of Breathing Relaxation with Ballon Blowing Technique toward Physiological Changes of COPD Patients. In: ASEAN/Asian Academic Society International Conference Proceeding Series. 2017.
8. Shakila D, Kokilavani N. Balloon blowing exercise improves respiratory patterns among children with bronchial asthma at the selected hospital in Kancheepuram districts Tamilnadu. Int J Recent Sci Res. 2016;7(11):14371–4.
9. Barbanti M, Yang T-H, Rodès Cabau J, Tamburino C, Wood DA, Jilaihawi H, et al. Anatomical and procedural features associated with aortic root rupture during balloon-expandable transcatheter aortic valve replacement. Circulation. 2013;128(3):244–53.
10. Nugraha, Ary, Yuseran Yuseran, and Candra Kusuma Negara. "Audio-Visual Media To Improve Knowledge About Covid-19 Among Elementary School Children." j-HIMEL 2.2 (2021): 9-12.
11. Negara, Candra Kusuma, et al. "Guided Imagery Using Classical Music on The Reduction in Pain Level of Fracture Patients." INDONESIAN NURSING JOURNAL OF EDUCATION AND CLINIC (INJEC) 4.1 (2019): 43-47.
12. Astuti, Noormailida, Candra Kusuma Negara, and Noor Jannah. "SBAR COMMUNICATION IMPLICATIONS FOR COVID-19 PATIENT SATISFACTION." j-HIMEL 2.1 (2021): 12-16.
13. Negara, Candra Kusuma. "SPORTS ACTIVITIES WITH A DEGREE OF LEVEL HYPERTENSION DURING THE COVID-19 PANDEMIC." j-HIMEL 2.2 (2021): 5-8.