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Clinical Study

Effect of breathing and *Daoyin* exercises on the quality of life in patients with chronic obstructive pulmonary disease

中医呼吸导引对慢性阻塞性肺疾病患者生活质量的影响

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Abstract

Objective: To observe the effect of breathing and *Daoyin* exercises on the quality of life in patients with stable chronic obstructive pulmonary disease (COPD) due to deficiency of the lung and kidney (grade II-III).

Methods: A total of 60 eligible cases were randomly allocated into a treatment group (n=30) and a control group (n=30) by random number table. Cases in the control group received routine Western medical treatment, whereas cases in the treatment group conducted breathing and *Daoyin* exercises in addition to routine Western medical treatment. Patients in both groups were treated for a total of 3 months. Then the observation was made on changes in pulmonary ventilation function, major clinical symptoms, modified Medical Research Council scale (mMRC), distance in 6-minute walk test (6-MWT), COPD assessment test (CAT) and efficacy satisfaction questionnaire for COPD (ESQ-COPD) before and after treatment.

Results: After treatment, the total effective rate was 80.0% in the treatment group, versus 66.7% in the control group, showing a statistical difference ($P<0.05$). Patients in the treatment group obtained more significant improvement in coughing, sputum production, dyspnea and shortness of breath than those in the control group ($P<0.05$). Patients in the treatment group obtained more significant elevation in the forced expiratory volume in 1 second percentage of predicted value (FEV1%) and peak expiratory flow rate (PEF%) than those in the control group ($P<0.05$). Patients in the treatment group obtained lower mMRC score than those in the control group ($P<0.05$). Patients in the treatment group obtained longer 6-MWT distance than those in the control group ($P<0.05$). Patients in the treatment group obtained lower CAT score ($P<0.01$) and higher ESQ-COPD score ($P<0.05$) than those in the control group.

Conclusion: Breathing and *Daoyin* exercises combined with routine Western medical treatment are effective for stable COPD (grade II-III) due to deficiency of the lung and kidney and can improve the patients' quality of life.

Keywords: Physical and Breathing Exercises; Research on Qigong; Pulmonary Disease, Chronic Obstructive; Respiratory Function Tests; Peak Expiratory Flow Rate

【摘要】目的: 观察中医呼吸导引对肺肾两虚型慢性阻塞性肺疾病(chronic obstructive pulmonary disease, COPD）稳定期Ⅱ-Ⅲ级患者生活质量的影响。**方法:** 选择符合纳入标准的肺肾两虚型 COPD 稳定期Ⅱ-Ⅲ级患者 60 例，采用随机数字表法随机分为治疗组和对照组，每组 30 例。对照组给予西医基础治疗，治疗组在西医基础治疗基础上进行中医呼吸导引练习，疗程均为 3 个月。观察治疗前后两组患者肺通气功能、主要临床症状、改良的英国医学研究委员会呼吸困难量表(modified Medical Research Council scale, mMRC)评分、6 min 步行试验(6-minute walk test, 6-MWT)距离、COPD 评估测试(COPD assessment test, CAT)以及 COPD 疗效满意度问卷(efficacy satisfaction questionnaire for COPD, ESQ-COPD)的变化。**结果:** 治疗后，治疗组总有效率为 80.0%，对照组为 66.7%，治疗组疗效优于对照组($P<0.05$)。治疗组患者的咳嗽、咯痰、喘息、气短症状的改善情况优于对照组($P<0.05$)。治疗组患者肺功能的第一秒用力呼气容积占预计值比值（forced expiratory volume in 1 second percentage of predicted value, FEV1%)、呼吸峰流速(peak expiratory flow rate, PEF%)改善率较对照组均有升高($P<0.05$)，mMRC 评分低于对照组($P<0.05$)；治疗组患者的 6-MWT 距离较对照组明显延长($P<0.01$)；治疗组患者 CAT 的评分低于对照组($P<0.01$)。治疗组患者的 ESQ-COPD 评分明显高于对照组($P<0.05$)。**结论:** 中医呼吸导引练习联合常规西医治疗对肺肾两虚型 COPD 稳定期Ⅱ-Ⅲ级的患者具有较好的临床疗效，并能改善患者的生活质量。

【关键词】 导引；气功研究；肺疾病，慢性阻塞性；呼吸功能测试；呼气流速峰值
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Chronic obstructive pulmonary disease (COPD) is a common chronic respiratory system problem. Along with environmental pollution and aging, the morbidity and mortality of COPD increase year by year. Today, COPD has become a major public health issue[1-3]. According to the 2011 version of global initiative for chronic obstructive lung disease (GOLD)[4], once COPD has been diagnosed, effective management should be aimed at the following goals: relieve symptoms; prevent disease progression; improve exercise tolerance; improve health status; prevent and treat complications; prevent and treat exacerbations and reduce mortality. Currently, there is no specific drug that can stop the declining of pulmonary function in patients with COPD[5]. In the 2007 guidelines of the American College of Chest Physicians (ACCP)/the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) on pulmonary rehabilitation, program of exercise training of the muscles of ambulation is recommended as a mandatory component of pulmonary rehabilitation for patients with COPD (grade of recommendation: 1A) and pulmonary rehabilitation improves the symptom of dyspnea in patients with COPD (grade of recommendation: 1A)[6]. To establish a traditional Chinese medicine (TCM) rehabilitation protocol for COPD and benefit COPD patients, the State Administration of Traditional Chinese Medicine initiated the study on 'breathing and *Daoyin* exercises for stable COPD' to assess its effect on COPD patients' pulmonary function and exercise endurance. This randomized controlled clinical trial studied the effect of breathing and *Daoyin* exercises on patients with COPD due to deficiency of the lung and kidney. The results are now summarized as follows.

1 Clinical Materials

1.1 Diagnostic criteria

1.1.1 Diagnosis in Western medicine

This was based on the diagnosis, staging and grading in *Clinical Guidelines for Chronic Obstructive Pulmonary Disease* (2011 version) by Chronic Obstructive Pulmonary Disease Workgroup, Chinese Society of Respiratory Disease[4].

Diagnostic criteria: A chronic cough, sputum production, progressively aggravating dyspnea and a history of exposure to risk factors for the disease. Pulmonary function is essential to confirm airflow obstruction, obstruction severity and emphysema. The forced expiratory volume in 1 second to forced vital capacity ratio (FEV1/FVC) of less than 0.70 indicates incompletely reversible poor airflow. The forced expiratory volume in 1 second percentage of predicted value (FEV1%) is used for functional classification.

1.1.2 Diagnosis in Chinese medicine

This was based on the *Guiding Principles for Clinical Study of New Chinese Medicines*[7] and *Reference for Differentiation of Deficiency Syndrome in Chinese Medicine*[8] for COPD due to deficiency of the lung and kidney.

Major symptoms: Cough and shortness of breath that aggravate upon physical exertion, scanty, thin white sputum and chest tightness.

Associated symptoms: General fatigue, weakness, frequent common colds and low back and knee soreness.

Tongue: Pale red with a thin white coating.

Pulse: Deep thready or weak thread.

A diagnosis can be made with major symptoms, more than 2 associated symptoms and tongue/pulse conditions.

1.2 Inclusion criteria

Those who met the above diagnostic criteria in both Western and Chinese medicine; grade II-III pulmonary function; and men or women aged between 18 and 65 years.

1.3 Exclusion criteria

Those who failed to meet the above diagnostic criteria; having cough, sputum production and dyspnea due to pulmonary tuberculosis (TB), pneumoconiosis, pulmonary abscess, bronchial asthma, bronchiectasis, heart disease, cardiac insufficiency and chronic nasopharyngeal diseases; having complications of severe cardiovascular, hepatic, renal and hemopoietic system; having mental illness; having a complication of cardiac insufficiency; and pregnant and breast-feeding women.

1.4 Statistical method

The SPSS 16.0 version software was used for statistical analysis. The measurement data were expressed as ($\bar{x} \pm s$), using *t*-test or One-way ANOVA. The Chi-square test was used for unranked data and *Ridit* analysis for ranked data. A *P* value of less than 0.05 indicated a statistical significance.

1.5 General materials

A total of 60 COPD cases treated in Shuguang Hospital, Shanghai University of Traditional Chinese Medicine between September 2012 and December 2013 were randomly allocated into a treatment group (n=30) and a control group (n=30). There were no significant between-group differences in gender, age, duration, and pulmonary function (all $P > 0.05$), indicating that the two groups were comparable (Table 1).

Table 1. Between-group comparison in baseline data

Group	n	Gender (case)		Mean age ($\bar{x}\pm s$, year)	Mean duration ($\bar{x}\pm s$, year)	COPD grade (case)	
		Male	Female			II	III
Treatment	30	18	12	57.6±7.6	10.4±2.1	7	23
Control	30	17	13	54.2±6.5	9.7±1.6	10	20

2 Treatment Methods

2.1 Control group

By referring to the *Clinical Guidelines for Chronic Obstructive Pulmonary Disease*[4] for stable COPD (grade II-III), patients were treated with long-acting beta agonists (LABAs) and long-acting theophylline sustained release tablets (manufactured by Guangzhou Maite Xinghua Pharmaceutical Co., Ltd., China, Batch No: GYZZ H44023791): 1 tablet (100 mg) for each dose, 2 doses a day, for a total of 3 months.

2.2 Treatment group

In addition to aforementioned treatment in the control group, patients in the treatment group conducted breathing and *Daoyin* exercises (six sections).

Section 1: Commencing form to tranquilize the mind. Stand in a relaxed and tranquil state, relax the body, separate the feet to shoulder-width apart, close the eyes, touch the palate with the tongue, close the mouth/lips, draw in the chest and abdomen, lift the anus, naturally drop the arms, slightly bend the hip and knee joints, remove distracting thoughts and perform a 5-min abdominal breathing (Figure 1).

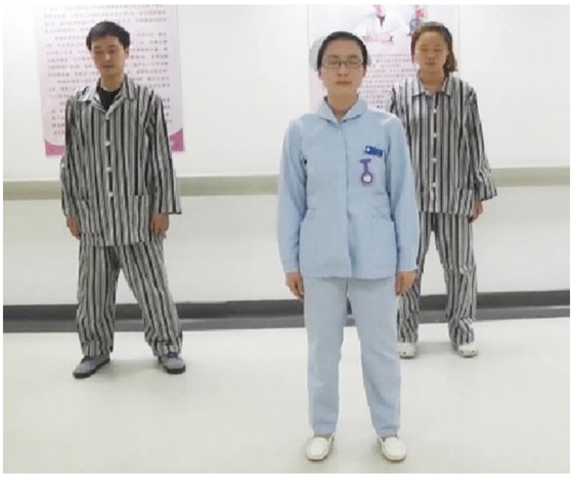

Figure 1. Standing in a relaxed and tranquil state

Section 2: Breathing to upper *Dantian* [around Yintang (GV 29)] and lower *Dantian* [around Guanyuan (CV 40)] to regulate lung qi. Stand with the feet together, move the left foot a step forward at an angle of 45° and lift the hands to upper *Dantian*. Slowly separate the hands and breathe in with the nose and breathe out with the mouth when closing the hands. Then, move the hands to the lower *Dantian*. Slowly separate the hands and breathe in with the nose, and breathe out with the mouth when closing the hands. Repeat 3 times. Then repeat another 3 times with the right foot (Figure 2).

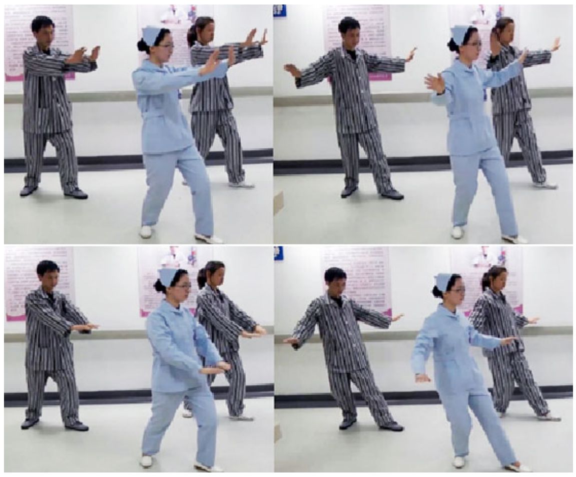

Figure 2. Breathing to upper and lower *Dantian*

Section 3: Regulating the lung and kidney. Slowly lift the arms from the side of the body with palms facing downward and turn the palms upward when the arms are fully extended. Slowly close the hands in front of the body and lift to the upper *Dantian*. Press down to the lower *Dantian*, bend over and flex the knee. Shift the body weight forward, gently touch the ground with Yongquan (KI 1), imagine a spring flowing from Yongquan (KI 1) to the sacrum along the medial aspect of the lower leg and thigh, and further ascend to pass through the kidney along the spine. Open the hands, allow the imagination to further ascend to pass through the diaphragm and enter the lung and then to the axillary fossa. Turn the palms upward and allow the imagination to reach Shaoshang (LU 11) along the Lung Meridian of Hand Taiyin (Figure 3).

This section is the core part of breathing and *Daoyin* exercises, involving breathing, mental intent and body movements. This section is associated with the organs, the Lung Meridian and the Kidney Meridian. Since the kidney receives qi and is the root of qi and the lung dominates breathing, this exercise can regulate the depth of breathing and qi activities.

Section 4: Turning the body and extending the hands to both sides. Move the left foot one step to the left, gradually turn the upper body (90°), lift the hands to the waist and shift the body weight to the right leg. Then extend the hands backwards like a hawk spreading its wings and breathe in with the nose. Lift the hands to the level of the shoulders, extend the hands forward and downward and breathe out with an effort. Repeat 3 times. Then turn to the right side and repeat 3 times (Figure 4).

This section aims to open the chest and assist breathing through combining body movements and abdominal breathing.

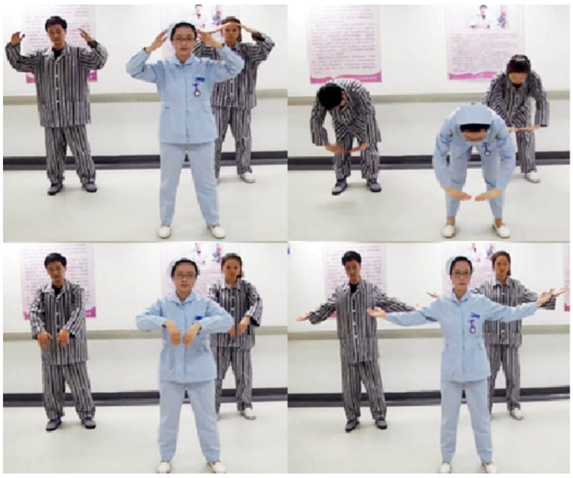

Figure 3. Regulating the lung and kidney

Figure 4. Turning the body and extending the hands

Section 5: Mo-rubbing Shenshu (BL 23) to warm kidney yang and strength the kidney's function in receiving qi. Lift the hands from the side to Shenshu (BL 23) and rub 36 times using the great thenar and then return the hands to the lower abdomen along the side of the body (Figure 5).

Section 6: Nourishing qi and concluding exercise. Place the overlapped hands on the lower abdomen, touch the palate with the tongue, tranquilize the mind, and regulate breathing for 5 min. Then return the tongue to normal position, rub the face, stretch the arms and legs and conclude the exercise (Figure 6).

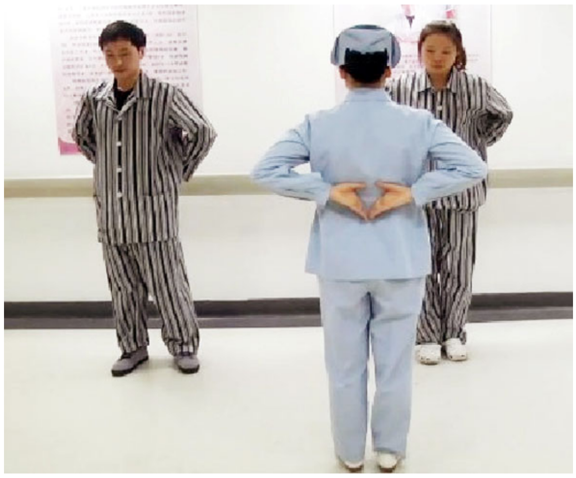

Figure 5. Mo-rubbing Shenshu (BL 23)

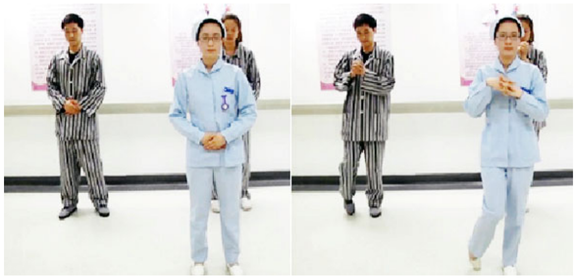

Figure 6. Nourishing qi and concluding exercise

Method: The first month was considered intensive training. During this period, patients conducted twice a day, 5 d a week. They were required to join the collective intensive training once a week by a rehabilitation therapist in the hospital and another intensive training at home, coupled with rehabilitation training in the rest of the days. Each patient performed training according to the CD-ROM for 1 month, followed by another 2-month unsupervised training, twice a day and 5 d a week. The follow-up was made via telephone once a week.

Patients were asked to discontinue in case of acute aggravation and treated with anti-infection therapies to stop coughing, resolve phlegm and alleviate dyspnea. These cases were calculated as rejection cases.

3 Results

3.1 Observation items and methods

3.1.1 Major clinical symptoms

The major clinical symptoms (coughing, sputum production, dyspnea, wheezing sound, chest tightness and shortness of breath) in patients with stable COPD were evaluated according to the *Guiding Principles for Clinical Study of New Chinese Medicines*. In addition, the changes in symptoms scores between the two groups were compared. Symptom classifications were shown in Table 2.

3.1.2 Clinical efficacy

The efficacy criteria were based on the *Guiding Principles for Clinical Study of New Chinese Medicines*[7].

The efficacy index was calculated using the Nimodipine method.

The total score refers to addition of COPD clinical symptom score.

Efficacy index = (Pre-treatment score — Post-treatment score) ÷ Pre-treatment score × 100%.

Clinical control: Absence or almost absence of clinical signs and symptoms, efficacy index ≥95%.

Marked effect: Significant improvement of clinical signs and symptoms, efficacy index ≥70% but <95%.

Improvement: Improvement of clinical signs and symptoms, efficacy index ≥30% but <70%.

Failure: Clinical signs and symptoms remain unchanged or aggravated, efficacy index <30%.

Table 2. COPD quantitative scale of clinical symptoms

Symptoms	Severity and score			
	None (0 point)	Mild (1 point)	Moderate (2 points)	Severe (3 points)
Coughing	None	Intermittent day coughing that does not affect life and work	Coughing during the day or occasional coughing at night, can still manage to work	Frequent coughing during the day and at night that affects work and rest
Sputum	<10 mL of sputum production	10-20 mL of sputum production	21-100 mL of sputum production	>100 mL of sputum production
Dyspnea	None	Occasional dyspnea that does not affect sleep or physical activity	Occurring day and night but can still manage to work	Dyspnea with an inability to lie flat and disturbed sleep and physical activity
Wheezing	None	Occasional or occurring with coughing or deep breathing	Scattered	All over the lungs
Shortness of breath	None	Upon physical exertion	Upon mild physical exertion	All the time

3.1.3 Pulmonary ventilation function

The pulmonary ventilation function was assessed by determining FEV1%, FEV1/FVC, PEF% and maximum mid-expiratory flow (MMEF%).

3.1.4 Dyspnea severity

The dyspnea severity was assessed using modified Medical Research Council scale (mMRC) score[9].

3.1.5 Exercise ability

The exercise ability was assessed using modified method used by Morales-Blanhir JE, et al[10]: 6 -minute walk test (6-MWT).

3.1.6 The quality of life

The patient's quality of life was assessed using the COPD assessment test (CAT) questionnaire on symptoms (coughing, sputum production and chest tightness), exercise, activities of daily living (ADL), emotion, sleep and stamina[11]. Each question is graded from 0 to 5 and the total score ranges from 0 to 40 points. A higher score indicates a poorer quality of life.

3.1.7 Efficacy satisfaction

The efficacy satisfaction was assessed using the efficacy satisfaction questionnaire for COPD (ESQ-COPD)[12].

ESQ-COPD includes 10 items in 4 domains (clinical symptoms, work/life ability, treatment convenience and therapeutic effect). The questions and answers are measured using a 5-point Likert scaling method: strongly unsatisfactory (1 point), unsatisfactory (2 points), neutral (3 points), satisfactory (4 points) and very satisfactory (5 points).

3.2 Clinical efficacy

The total effective rate was 80.0% in the treatment group, versus 66.7% in the control group, showing a statistical difference ($P<0.05$) and a better efficacy in the treatment group than that in the control group (Table 3).

3.3 Scores of major clinical symptoms and total symptom

3.3.1 Total symptom scores

Before treatment, there was no significant between-group difference in total symptom score ($P>0.05$). After treatment, the total symptom scores in both groups were significantly reduced ($P<0.01$); and the total symptom score in the treatment group was lower than that in the control group ($P<0.01$), indicating that patients in the treatment group obtained more significant symptom alleviation than those in the control group (Table 4).

Table 3. Between-group comparison in clinical efficacy (case)

Group	*n*	Clinical control	Marked effect	Improvement	Failure	Total effective rate (%)
Treatment	30	0	6	18	6	80.0 1)
Control	30	0	0	20	10	66.7

Note: Compared with the control group, 1) $P<0.05$

Table 4. Between-group comparison in total scores of clinical symptoms ($\bar{x}\pm s$, point)

Group	*n*	Before treatment	After treatment
Treatment	30	8.23±1.12	4.37±1.25 1)2)
Control	30	8.30±1.15	5.68±1.69 1)

Note: The intra-group comparison, 1) $P<0.01$; compared with the control group after treatment, 2) $P<0.01$

3.3.2 Between-group comparison in clinical symptoms

Before treatment, there were no significant between-group differences in major clinical symptoms ($P>0.05$). After treatment, coughing, dyspnea and shortness of breath in patients of the treatment group were significantly alleviated ($P<0.01$); the coughing and dyspnea in the control group were significantly alleviated ($P<0.05$); and patients in the treatment group obtained more significant improvement in coughing, sputum production, dyspnea and shortness of breath than those in the control group ($P<0.05$), indicating that patients in the treatment group had more significant improvements in three symptoms except for wheezing sound (Table 5).

3.4 Pulmonary ventilation function

Before treatment, there were no significant between-group differences in pulmonary ventilation function ($P>0.05$). After treatment, the FEV1% and PEF% in the treatment group were significantly elevated $P<0.01$, $P<0.05$); the FEV1% in the control group was significantly improved; and the improvements in FEV1% and PEF% were more significant in the treatment group than those in the control group ($P<0.05$), (Table 6).

Table 5. Between-group comparison in major clinical symptoms ($\bar{x}\pm s$, point)

Group	*n*	Time	Coughing	Sputum production	Dyspnea	Wheezing	Shortness of breath
Treatment	30	Before treatment	1.83±0.61	1.86±0.55	2.20±0.47	0.83±0.32	1.80±0.83
		After treatment	1.27±0.51 1)3)	1.63±0.57	1.02±0.64 1)3)	0.63±0.49	1.07±0.64 1)3)
Control	30	Before treatment	1.87±0.66	1.90±0.59	2.03±0.35	0.77±0.34	1.86±0.98
		After treatment	1.47±0.59 2)	1.67±0.48	1.54±0.69 2)	0.60±0.50	1.57±0.63

Note: The intra-group comparison, 1) $P<0.01$, 2) $P<0.05$; compared with the control group after treatment, 3) $P<0.05$

Table 6. Between-group comparison in pulmonary ventilation function indices ($\bar{x}\pm s$, %)

Group	*n*	Time	FEV1%	FEV1/FVC%	PEF%	MMEF%
Treatment	30	Before treatment	34.75±6.10	62.57±6.58	21.32±4.56	33.45±4.87
		After treatment	40.16±7.21 2)3)	63.53±5.36	27.78±6.25 1)3)	34.13±3.16
Control	30	Before treatment	35.28±6.85	63.19±5.46	20.86±5.89	32.58±4.78
		After treatment	38.83±6.93 1)	64.25±4.74	21.76±5.48	33.65±5.12

Note: The intra-group comparison, 1) $P<0.05$, 2) $P<0.01$; compared with the control group after treatment, 3) $P<0.05$

3.5 mMRC score

Before treatment, there was no significant between-group difference in mMRC score ($P>0.05$). After treatment, the mMRC scores in both groups were significantly reduced ($P<0.01$) and there was a significant between-group difference ($P<0.05$), indicating that dyspnea in COPD patients was alleviated in both groups but more significantly alleviated in the treatment group (Table 7).

3.6 6-MWT distance

Before treatment, there was no significant between-group difference in 6-MWT distance ($P>0.05$). After treatment, the 6-MWT distance in the treatment group was significantly extended ($P<0.01$) and there was a between-group statistical difference ($P<0.01$). However, there was no significant intra-group difference in 6-MWT distance in the control group ($P>0.05$), indicating that the exercise endurance in COPD patients in the treatment group was improved (Table 8).

Table 7. Between-group comparison in mMRC score ($\bar{x}$ ±*s*, point)

Group	*n*	Before treatment	After treatment
Treatment	30	2.17±0.52	1.57±0.56$^{1)2)}$
Control	30	2.09±0.48	1.71±0.53$^{1)}$

Note: The intra-group comparison, 1) $P<0.01$; compared with the control group after treatment, 2) $P<0.05$

Table 8. Between-group comparison in 6-MWT distance ($\bar{x}$ ±*s*, m)

Group	*n*	Before treatment	After treatment
Treatment	30	255.48±23.46	273.49±25.32$^{1)2)}$
Control	30	258.16±19.87	261.43±28.72

Note: The intra-group comparison before and after treatment, 1) $P<0.01$; compared with the control group after treatment, 2) $P<0.01$

3.7 CAT score

Before treatment, there was no significant between-group difference in CAT score ($P>0.05$). After treatment, the CAT scores in both groups were significantly decreased ($P<0.01$, $P<0.05$) and there was a between-group statistical significance ($P<0.01$), indicating that the quality of life in COPD patients was improved in both groups but more significantly improved in the treatment group (Table 9).

Table 9. Between-group comparison in CAT score ($\bar{x}$ ±*s*, point)

Group	*n*	Before treatment	After treatment
Treatment	30	17.25±2.58	14.16±2.28$^{1)3)}$
Control	30	17.76±3.16	15.89±2.65$^{2)}$

Note: The intra-group comparison, 1) $P<0.05$, 2) $P<0.05$; compared with the control group after treatment, 3) $P<0.01$

3.8 ESQ-COPD score

Before treatment, there was no significant between-group difference in ESQ-COPD score ($P>0.05$). After treatment, except for sputum production, patients in the treatment group obtained a more significant improvement in other symptoms ($P<0.01$, $P<0.05$) than those in the control group; except for sputum production, worries and leisure activities, there were between-group statistical differences in other items ($P<0.01$, $P<0.05$), indicating that patients in the treatment group obtained a better efficacy satisfaction than those in the control group (Table 10).

Table 10. Between-group comparison in ESQ-COPD score ($\bar{x}$ ±*s*, point)

Items	Treatment group (*n*=30)		Control group (*n*=30)	
	Before treatment	After treatment	Before treatment	After treatment
Improvement in coughing	2.93±0.70	3.57±0.81$^{1)3)}$	2.83±0.75	3.27±0.78$^{2)}$
Improvement in sputum production	2.67±0.61	2.87±0.82	2.77±0.77	3.27±0.78$^{2)}$
Improvement in chest tightness	2.93±0.45	3.30±0.79$^{1)3)}$	3.13±0.57	3.17±0.59
Improvement in dyspnea	3.23±0.57	3.73±0.68$^{1)3)}$	3.13±0.63	3.25±0.65
Self-care	3.87±0.43	4.33±0.41$^{2)4)}$	3.70±0.53	3.93±0.45
Improvement in fatigue	3.17±0.53	3.83±0.70$^{1)3)}$	3.03±0.61	3.43±0.73$^{2)}$
Disease awareness	2.97±0.56	4.37±0.56$^{1)3)}$	3.20±0.61	4.33±0.48$^{2)}$
Decreased worries	2.97±0.61	3.90±0.55$^{2)}$	3.17±0.59	3.97±0.67$^{2)}$
Physical activities	3.27±0.58	3.93±0.64$^{1)4)}$	3.37±0.72	3.57±0.72
Leisure activities	3.80±0.55	4.13±0.51$^{2)}$	3.97±0.41	4.07±0.52

Note: The intra-group comparison before and after treatment, 1) $P<0.05$, 2) $P<0.05$; compared with the control group after treatment, 3) $P<0.01$, 4) $P<0.05$

4 Discussion

Despite the unknown etiology for COPD, epidemiological data have shown that it is closely associated with tobacco smoking, inhalation of dust, occupational disease, breathing chemical fumes and air pollution. Other associated factors may include infection, nutrition, climate, gender, dysfunction of autonomic nerve, endocrine disorder, and heredity[13]. It's long been important to manage stable COPD to prevent COPD progression and improve the patients' quality of life.

Based on its clinical symptoms, COPD falls under the category of 'lung distension', 'difficulty or labored breathing' or 'cough' in Chinese medicine. It can be diagnosed as a combined deficiency and excess. Here deficiency refers to qi deficiency of the lung, spleen and kidney; excess refers to phlegm-dampness and stagnant blood. Lung qi deficiency and failure of lung qi to disperse and descend can cause lung distension. Over time, lung deficiency may affect the kidney (mother problems affecting the son based on the five-element theory), resulting in kidney qi deficiency and subsequently, disturbed qi activities. Alternatively, kidney essence deficiency may cause qi to float and result in labored breathing. As a result, the essential strategy for stable COPD is to regulate qi activities of the lung and kidney. A variety of TCM therapies can help in this regard, such as qigong, breathing and *Daoyin* exercises, breathing exercise, tuina, diet and psychological counseling[14].

Six sections of breathing and *Daoyin* exercises in this study can resolve fullness and distension by regulating qi activities of the lung and kidney, induce qi to its root (kidney), and alleviate coughing and difficulty breathing. Repeated massage on the kidney area can warm the vital gate, reinforce kidney yang, activate yang qi of the entire body, circulate qi and blood and regulate functions of Zang-fu organs. In addition, breathing to the *Dantian* can increase the pulmonary ventilation and strengthen respiratory muscles. Combining breathing, mental intent and body movements can help to alleviate clinical symptoms in COPD patients.

This study has suggested that breathing and *Daoyin* exercises can better improve clinical symptoms (especially coughing, dyspnea and shortness of breath), pulmonary ventilation function and exercise endurance in COPD patients, further increase their quality of life and efficacy satisfaction. This study can provide evidence of TCM therapies in COPD rehabilitation. Large-sample, multi-centered clinical trials are needed to investigate the intervention route and mechanism of these therapies.

Conflict of Interest

The authors declared that there was no conflict of interest in this article.

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Statement of Informed Consent

Informed consent was obtained from all individual participants included in this study.

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