Literature Search: COPD and Complementary Therapies – 2 October 2019

Search strategy: "Complementary Therapies"[Mesh] AND "Pulmonary Disease, Chronic Obstructive"[Mesh] AND ((Clinical Trial[ptyp] OR Meta-Analysis[ptyp] OR systematic[sb]) AND "humans"[MeSH Terms] AND English[lang])

1. Medicine (Baltimore). 2019 Sep;98(37):e17112. doi: 10.1097/MD.0000000000017112.

Safety and efficacy of **acupuncture** for the treatment of chronic obstructive pulmonary disease: A systematic review protocol.

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a common chronic respiratory disease with increasing morbidity and mortality that cause huge social and economic loss. Although recommended by guidelines, pulmonary rehabilitation has not been widely applied in clinics because of its inherent limitations. Acupuncture therapy (AT) as one of the most popular treatments in traditional Chinese medicine has been used to treat COPD. We aim to evaluate the safety and efficacy of acupuncture in the treatment of COPD.
METHODS: Web of science, PubMed, Springer, Medline, Cochrane Library, EBASE, WHO International Clinical Trials Registry Platform (ICTRP), China National Knowledge Infrastructure Database (CNKI), Wan Fang Database, Chinese Scientific Journal Database (VIP), and Chinese Biomedical Literature Database will be searched from their inception to May 10, 2019. Randomized controlled trials that evaluated the safety and efficacy of acupuncture for the treatment on patients with COPD will be included. The primary outcome measures will include Dyspnea scores, lung function and blood eosinophils. The secondary outcome measures will include St George's Respiratory Questionnaire and 6-minute walk distance. Study selection, data extraction, and risk of bias assessment will be independently undertaken, respectively. Statistical analysis will be conducted by RevMan software (version 5.3).
RESULTS: This study will provide high-quality synthesis based on current evidence of acupuncture treatment for COPD in several aspects, including symptom score, quality of life score, side effects and laboratory examination, such as lung function text, blood eosinophils (EOS) etc. CONCLUSION:: The results of this study will provide updated evidence for weather acupuncture is an effective and safe intervention for COPD.
ETHICS AND DISSEMINATION: It is not necessary for this systematic review to acquire an ethical approval. This review will be disseminated in a peer-reviewed

journal or conference presentation.
PROSPERO REGISTRATION NUMBER: PROSPERO CRD42019136087.

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PMID: 31517846 [Indexed for MEDLINE]

2. Medicine (Baltimore). 2019 Jul;98(30):e16633. doi: 10.1097/MD.0000000000016633.

The **Qigong Wuqinxi** for chronic obstructive pulmonary disease: Protocol for a systematic review and meta-analysis.

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a chronic and progressive disease that represents an important public health challenge nowadays. Despite the growing number of studies assessing the rehabilitation outcome of Wuqinxi for COPD, their many variables and observations are often explored with a relatively small sample size, accordingly maybe lead to potential false-positive results. The aim of this systematic review and meta-analysis is to evaluate the rehabilitation efficacy of Wuqinxi for COPD.
METHODS: A detailed search for articles up to June 2019 will be performed to identify randomized controlled trials for Wuqinxi in COPD. The following database will be used: PUBMED, Embase, Scopus, Web of Science, Google Scholar, Cochrane Library, Sino Med, Chinese National Knowledge Infrastructure, Chinese Science and Technology Periodicals Database, and Wanfang Database. Grey literature will be explored and the selection of studies, data extraction and validation will performed independently by 2 reviewers using predefined selection criteria and quality indicators. Stata V.13.0 and Review manager 5.3 software will be used for data synthesis, sensitivity analysis, subgroup analysis, and risk of bias assessment. We will use the grading of recommendations assessment, development, and evaluation system to assess the quality of evidence.
RESULTS: This research will update previous evidence summaries and provide a quantitative and standardized assessment of the rehabilitation efficacy of Wuqinxi for COPD.
CONCLUSION: This systematic review will generate the latest evidence for determining whether Wuqinxi has a positive rehabilitation effect for COPD.PROSPERO registration number: PROSPERO CRD 42019120960.

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PMID: 31348315 [Indexed for MEDLINE]

3. Medicine (Baltimore). 2019 Jul;98(27):e16299. doi: 10.1097/MD.0000000000016299.

Traditional Chinese exercise (TCE) on pulmonary rehabilitation in patients with stable chronic obstructive pulmonary disease: Protocol for a systematic review and network meta-analysis.

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) has the characteristics of high incidence, mortality, disability rate, and heavy economic burden. Symptomatic measures such as anti-inflammatory, antispasmodic and anti-asthmatic are widely used in the treatment of COPD, and pulmonary rehabilitation has not been fully utilized. It is reported that up to 10 different kinds of Traditional Chinese exercises (TCEs) are often used for treating stable COPD. There are many randomized controlled trials (RCTs) and systematic reviews that have evaluated the efficacy of various TCEs for COPD. However, most of these studies were designed in comparison with conventional western medicine or health education. There are rarely studies to compare different TCEs head to head. Therefore, there remains uncertainty regarding the comparative efficacy among different TCEs. Thus, we plan to conduct a systematic review and Network meta-analysis (NMA) to compare the efficacy among 5 different TCEs and rank their benefits relative to each other. It is hoped that the findings of this study will facilitate the management and application of TCEs in the treatment of COPD.
METHODS: A systematic and comprehensive literature search will be performed from inception to April 2019 in both English and Chinese databases, involving Medline, Cochrane Library, Embase, China National Knowledge Infrastructure Database, Wanfang Database, China Biomedical Literature Database, and Chongqing VIP information. RCTs related to TCE in the treatment of COPD will be included. Quality of included trials will be assessed according to the risk of bias tool of Cochrane Handbook 5.1.0. The GRADE approach will be used to rate the certainty of the evidence of estimates derived from NMA. Data analysis will be conducted by using STATA 14.0.
RESULTS: This systematic review and NMA aims to summarize the direct and indirect evidence for different kinds of TCEs and to rank these TCEs. The findings of this NMA will be reported according to the PRISMA-NMA statement. The results of the NMA will be submitted to a peer-reviewed journal once completed.
CONCLUSION: Using NMA, this study will provide an evidence profile which will be helpful to inform the selection of TCE for treating patients with COPD. The results will inform clinicians, bridge the evidence gaps, and identify promising TCE for future trials.
PROSPERO REGISTRATION NUMBER: PROSPERO CRD 42019132970.

DOI: 10.1097/MD.0000000000016299

PMCID: PMC6635256
PMID: 31277166 [Indexed for MEDLINE]

4. Complement Ther Clin Pract. 2019 May;35:208-218. doi: 10.1016/j.ctcp.2019.02.016. Epub 2019 Mar 2.

Acupuncture therapy improves health-related quality of life in patients with chronic obstructive pulmonary disease: A systematic review and meta-analysis.

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) is highly prevalent around the world and has a large impact on its patients, leading to a poor health-related quality of life (HRQL) and exercise capacity. Even under optimal medications, there are still many patients with poor HRQL. Body acupuncture therapy (BAT) is a non-invasive and a popular therapy. Therefore, we aimed to comprehensively analyze the effects of BAT in COPD.
MATERIALS AND METHODS: Eight electronic databases were searched. We included randomized controlled trials (RCTs) that evaluated the effect of BAT, medication (M), and pulmonary rehabilitation (PR). The primary outcome was HRQL evaluated by St. George's respiratory questionnaire (SGRQ) or COPD assessment test (CAT).
RESULTS: Of the 922 articles, 12 studies were included with attesting a total of 798 participants. The result obtained indicated a significant improvement that favored the BAT + M group over the M group in CAT scores (MD: -4.77; 95% CI: -6.53 to -3.01; $p < 0.00001$).
CONCLUSIONS: BAT is an effective adjunctive non-pharmacological treatment to improve HRQL in patients under medical treatment for COPD. We suggested that BAT should be considered as one of the methods of management in patients with COPD.

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PMID: 31003660 [Indexed for MEDLINE]

5. Medicine (Baltimore). 2019 May;98(22):e15776. doi: 10.1097/MD.0000000000015776.

Effect of **Qigong** on self-rating depression and anxiety scale scores of COPD patients: A meta-analysis.

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OBJECTIVE: To explore the clinical efficacy and safety of Qigong in reducing the self-rating depression scale (SDS) and self-rating anxiety scale (SAS) scores of patients with chronic obstructive pulmonary disease (COPD).
METHODS: We searched CNKI, Wan fang, Chongqing VIP, China Biology Medicine disc, PubMed, Cochrane Library, and EMBASE for studies published as of Dec 31, 2018. All randomized controlled trials of Qigong in COPD patients, which met the inclusion criteria were included. The Cochrane bias risk assessment tool was used for literature evaluation. RevMan 5.3 software was used for meta-analysis.
RESULTS: Six studies (combined n = 415 patients) met the inclusion criteria. Compared with conventional therapy alone, Qigong in combination with conventional therapy significantly improved the following outcome measures: SDS score [mean difference (MD) -3.99, 95% CI (-6.17, -1.82), P < .001, I = 69%]; SAS score[MD -4.57, 95% CI (-5.67, -3.48), P < .001, I = 15%]; forced expiratory volume in one second/prediction (FEV1% pred) [MD 3.77, 95% CI (0.97,6.58), P < .01, I = 0]; forced expiratory volume in one second (FEV1) [MD 0.21, 95% CI (0.13, 0.30), P < .001, I = 0%]; forced vital capacity (FVC) [MD 0.28, 95% CI (0.16, 0.40), P < .001, I = 0]; 6-minute walk test (6MWT) distance [MD 39.31, 95% CI (18.27, 60.34), P < .001, I = 32%]; and St. George's Respiratory Questionnaire (SGRQ) total score [MD -11.42, 95% CI (-21.80, -1.03), P < .05, I = 72%].
CONCLUSION: Qigong can improve the SDS and SAS scores of COPD patients, and has auxiliary effects on improving lung function, 6MWT distance, and SGRQ score.

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PMID: 31145299 [Indexed for MEDLINE]

6. Medicine (Baltimore). 2019 Feb;98(8):e14034. doi: 10.1097/MD.0000000000014034.

Observation of the curative effect of device-guided rehabilitation on respiratory function in stable patients with chronic obstructive pulmonary disease.

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a serious lung disease for individuals in middle age and especially in old people. The study was aimed to observe the curative effect of device-guided rehabilitation on respiratory functions in stable COPD patients.
METHODS: Sixty-seven stable COPD patients were enrolled and assigned to the experiment group (n = 36) and the control group (n = 31). The conventional pulmonary rehabilitation treatments, including pursed lips breathing (PLB) and abdominal breathing training, were applied in the control group. Respiratory muscle training of the experiment group was performed using the respiratory endurance training device combined with traditional techniques. Both groups were assessed by 6-minute walk test (6MWT), COPD assessment test (CAT), body mass index, airflow obstruction, dyspnea, and exercise capacity (BODE) index. Besides, the pulmonary function (FVC%, FEVl%) were measured at 6 months before and after treatment.
RESULTS: After treatment, the 6MWT, CAT, BODE index were significantly increased compared with pre-treatment in both groups ($P < .01$), but not FVC% and FEVl%. Compared with the control group, the combination therapy in the experiment group could significantly improve the 6MWT ($P = .0094$), CAT ($P = .0071$) and BODE index ($P = .0064$) as well as the changes of 6MWT ($P < .01$), CAT ($P < .01$), and BODE index ($P < .01$) before and after treatment.
CONCLUSIONS: The traditional respiratory training combined with device-guided pulmonary rehabilitation can improve the respiratory muscle function and athletic ability in stable COPD patients.

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PMCID: PMC6408035
PMID: 30813125 [Indexed for MEDLINE]

7. Pulm Med. 2019 Jan 3;2019:6364376. doi: 10.1155/2019/6364376. eCollection 2019.

Comparison of Diaphragmatic Stretch Technique and Manual Diaphragm Release Technique on Diaphragmatic Excursion in Chronic Obstructive Pulmonary Disease: A Randomized Crossover Trial.

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Background: Chronic Obstructive Pulmonary Disease (COPD) impairs the function of the diaphragm by placing it at a mechanical disadvantage, shortening its operating length and changing the mechanical linkage between its various parts. This makes the diaphragm's contraction less effective in raising and expanding the lower rib cage, thereby increasing the work of breathing and reducing the functional capacity.
Aim of the Study: To compare the effects of diaphragmatic stretch and manual diaphragm release technique on diaphragmatic excursion in patients with COPD.
Materials and Methods: This randomised crossover trial included 20 clinically stable patients with mild and moderate COPD classified according to the GOLD criteria. The patients were allocated to group A or group B by block randomization done by primary investigator. The information about the technique was concealed in a sealed opaque envelope and revealed to the patients only after allocation of groups. After taking the demographic data and baseline values of the outcome measures (diaphragm mobility by ultrasonography performed by an experienced radiologist and chest expansion by inch tape performed by the therapist), group A subjects underwent the diaphragmatic stretch technique and the group B subjects underwent the manual diaphragm release technique. Both the interventions were performed in 2 sets of 10 deep breaths with 1-minute interval between the sets. The two outcome variables were recorded immediately after the intervention. A wash-out period of 3 hours was maintained to neutralize the effect of given intervention. Later the patients of group A and group B were crossed over to the other group.
Results: In the diaphragmatic stretch technique, there was a statistically significant improvement in the diaphragmatic excursion before and after the treatment. On the right side, p=0.00 and p=0.003 in the midclavicular line and midaxillary line. On the left side, p=0.004 and p=0.312 in the midclavicular and midaxillary line. In manual diaphragm release technique, there was a statistically significant improvement before and after the treatment. On the right side, p=0.000 and p=0.000 in the midclavicular line and midaxillary line. On the left side, p=0.002 and p=0.000 in the midclavicular line and midaxillary line. There was no statistically significant difference in diaphragmatic excursion in the comparison of the postintervention values of both techniques.
Conclusion: The diaphragmatic stretch technique and manual diaphragm release technique can be safely recommended for patients with clinically stable COPD to improve diaphragmatic excursion.

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PMID: 30719351 [Indexed for MEDLINE]

8. Adv Exp Med Biol. 2019;1176:35-46. doi: 10.1007/5584_2019_354.

Subterranean Pulmonary Rehabilitation in Chronic Obstructive Pulmonary Disease.

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Pulmonary rehabilitation (PR) has been recommended as an integral part of treatment for patients with chronic obstructive pulmonary disease (COPD). Climate therapy in salt mine chambers has been found of benefit in chronic respiratory diseases. The study compares long-term effects of underground PR in the Wieliczka Salt Mine with that conducted on the surface. There were 42 COPD patients enrolled in the study, with FEV1/FVC <0.7 predicted and post-bronchodilator reversibility <12%, randomized into pulmonary rehabilitation in the mine (Group I, n = 23) and PR on the surface (Group II, n = 19). The outcomes consisted of lung function variables, exercise performance (6-min walk test - 6MWT), dyspnea (mMRC), and compliance with the disease and quality of life (COPD Assessment Test - CAT) and BODE index, compared at baseline (P0), end (P1), and 6 months after pulmonary rehabilitation (P2). The findings were that subterranean pulmonary rehabilitation significantly reduced CAT score ($p < 0.001$), BODE index ($p = 0.004$), and dyspnea (mMRC) ($p = 0.001$) and increased distance in 6MWT ($p < 0.001$), compared with its equivalent conducted on the surface. Further, beneficial effect of subterranean treatment was sustained during the following half a year as opposed to the effect noticed on patients treated on the surface. We conclude that subterranean pulmonary rehabilitative treatment reduces symptoms and improves exercise tolerance to a greater and sustained extent, compared to a similar treatment on the surface, in patients suffering from COPD.

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PMID: 30980315 [Indexed for MEDLINE]

9. Int J Environ Res Public Health. 2018 Dec 28;16(1). pii: E72. doi: 10.3390/ijerph16010072.

Mind-Body Exercise (**Wuqinxi**) for Patients with Chronic Obstructive Pulmonary Disease: A Systematic Review and Meta-Analysis of Randomized Controlled Trials.

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Objective: This study is the first meta-analysis investigating the rehabilitative effects of Wuqinxi for patients with chronic obstructive pulmonary disease (COPD). Methods: Five electronic databases (PubMed, Web of Science, Scopus, CNKI, and Wanfang) from inception until early November 2018 were searched. All randomized controlled trials (RCT) using Wuqinxi as the main intervention component were included for meta-analysis. The pooled effect sizes (Standardized mean difference, SMD) were calculated to determine the magnitude of the Wuqinxi intervention effect. Moderator analysis was only conducted for total training time. Results: Overall results of the meta-analysis indicated that Wuqinxi exercise significantly improved exercise capability (SMD = 1.18, 95% CI 0.53 to 1.84, e < 0.001, I^2 = 84.97%), FEV1 (SMD = 0.44, 95% CI 0.12 to 0.77, e < 0.001, I^2 = 33.77%), FEV1% (SMD = 0.59, 95% CI 0.24 to 0.93, e < 0.001, I^2 = 63.79%), FEV1/FVC (SMD = 0.65, 95% CI 0.37 to 0.93, e = 0.006, I^2 = 44.32%) and CCQ (SMD = 1.23, 95% CI 0.31 to 2.14, e = 0.01, I^2 = 93.32%). Conclusions: With no occurrence of adverse event, clinicians could try to incorporate Wuqinxi exercise into their first-line rehabilitation regime for COPD patients.

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PMCID: PMC6338907
PMID: 30597878 [Indexed for MEDLINE]

10. Int J Chron Obstruct Pulmon Dis. 2018 Dec 5;13:3909-3921. doi: 10.2147/COPD.S181428. eCollection 2018.

Preliminary study: comparative effects of lung volume therapy between slow and fast deep-breathing techniques on pulmonary function, respiratory muscle strength, oxidative stress, cytokines, 6-minute walking distance, and quality of life in persons with COPD.

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Background: Lung volume therapy with the Voldyne® device can improve lung volume and has a nonsignificant benefit on respiratory muscle strength via the slow deep-breathing technique (SDBT); whereas respiratory muscle training with a respiratory muscle trainer via the fast deep-breathing technique (FDBT) has produced a significant improvement in people with COPD. Thus, the aim of this study was to compare the efficiency of lung volume therapy with the Voldyne® device with the SDBT and FDBT on pulmonary function, respiratory muscle strength, oxidative stress, cytokines, walking capacity, and quality of life (QoL) in people with COPD.
Methods: A total of 30 COPD patient volunteers with mild (stage I) to moderate (stage II) severity were randomized into two groups: SDBT (n=15) and FDBT (n=15). Pulmonary function (FVC, FEV1, and FEV1/FVC), maximal inspiratory mouth pressure (PImax), oxidative stress status (total antioxidant capacity [TAC], glutathione [GSH], malondialdehyde [MDA], and nitric oxide [NO]), inflammatory cytokines (tumor necrosis factor-alpha [TNF-α] and IL-6), 6-minute walking distance (6MWD), and total clinical COPD questionnaire (CCQ) score were evaluated before and after 4 weeks of training.
Results: All the parameters had no statistical difference between the groups before training. The PImax, TAC, IL-6, total QoL score, and 6MWD changed significantly in the SDBT group after the 4-week experiment as compared to those in the pre-experimental period, whereas FVC, FEV1, FEV1%, FEV1/FVC%, PImax, TAC, MDA, NO, TNF-α, IL-6, 6MWD, and total CCQ score changed significantly in the FDBT group as compared to those in the pre-experimental period. The FEV1%, PImax, TNF-α, IL-6, and total CCQ score differed significantly in the FDBT group in the post-experimental period as compared to those in the SDBT group.
Conclusion: This preliminary study concluded that the application of incentive spirometry with the Voldyne® device via fast deep breathing possibly improved respiratory muscle strength and QoL and reduced inflammatory cytokines, MDA, and NO better than that via slow deep breathing among people with COPD.

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PMCID: PMC6287646
PMID: 30584292 [Indexed for MEDLINE]

Conflict of interest statement: Disclosure The authors report no conflicts of interest in this work.

11. Am J Phys Med Rehabil. 2018 Dec;97(12):866-872. doi: 10.1097/PHM.0000000000000988.

Short-Term Effects of Normocapnic Hyperpnea and Exercise Training in Patients With Chronic Obstructive Pulmonary Disease: A Pilot Study.

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OBJECTIVE: The aim of the study was to evaluate the short-term physiologic effects of respiratory muscle training with normocapnic hyperpnea added to standard exercise training on respiratory muscle endurance/strength and exercise tolerance in patients with chronic obstructive pulmonary disease.
DESIGN: The study used a randomized controlled trial. Patients referred for rehabilitation were randomly assigned to 20 sessions (twice daily 5 d/wk) of either normocapnic hyperpnea (group 1, n = 12) or sham maneuvers (group 2, n = 10) in addition to individualized cycle training and abdominal, upper, and lower limb muscle exercise. At baseline and end of study, patients underwent evaluation of respiratory muscle endurance, maximum voluntary ventilation, maximal inspiratory, and expiratory pressures, and 6-min walking distance.
RESULTS: After training, a significant improvement was found only for group 1 in respiratory muscle endurance time (by 654 [481] secs versus 149 [216] secs for group 2, P = 0.0108) and maximal inspiratory (group 1: from 81.2 [21.9] cmH2O to 107.6 [23.0] cmH2O, P = 0.018 versus group 2: from 75.4 [13.8] cmH2O to 81.3 [18.9] cmH2O, P = 0.139). The difference between groups for 6-min walking distance, maximum voluntary ventilation, and expiratory pressures was not significant.
CONCLUSIONS: Short-term normocapnic hyperpnea training added to standard exercise, compared with exercise training alone, improves respiratory muscle endurance and strength but not exercise tolerance in patients with chronic obstructive pulmonary disease.

DOI: 10.1097/PHM.0000000000000988
PMID: 29927750 [Indexed for MEDLINE]

12. Respir Res. 2018 Nov 20;19(1):225. doi: 10.1186/s12931-018-0917-6.

Combination of inspiratory and expiratory muscle training in same respiratory cycle versus different cycles in COPD patients: a randomized trial.

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BACKGROUND: Difference between combined inspiratory and expiratory muscle training in same respiratory cycle or different cycles remained unclarified. We explored the difference between both patterns of combined trainings in patients with COPD.
METHODS: In this randomized, open-label, controlled trial, stable COPD subjects trained for 48 minutes daily, for 8 weeks, using a monitoring device for quality control. Ninety-two subjects were randomly and equally assigned for sham training, inspiratory muscle training(IMT), combined inspiratory and expiratory muscle training in same cycle(CTSC) or combined inspiratory and expiratory muscle training in different cycles(CTDC). Respiratory muscle strength, as the primary endpoint, was measured before and after training. Registry: ClinicalTrials.gov (identifier: NCT02326181).
RESULTS: Respiratory muscle training improved maximal inspiratory pressure(PImax), while no significant difference was found in PImax among IMT, CTSC and CTDC. Maximal expiratory pressure(PEmax) in CTSC and CTDC was greater than IMT(P = 0.026, and P=0.04, respectively) and sham training (P = 0.001). IMT, CTSC, and CTDC shortened inhalation and prolonged exhalation(P < 0.01). Subjects with respiratory muscle weakness in IMT and CTDC exhibited greater increase in PImax than those without. IMT, CTSC and CTDC showed no difference in symptoms and quality of life scales among themselves(P > 0.05).
CONCLUSION: Both patterns of CTSC and CTDC improved inspiratory and expiratory muscle strength, while IMT alone only raised PImax. Respiratory muscle training might change the respiratory cycles, and be more beneficial for COPD patients with inspiratory muscle weakness.

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PMCID: PMC6245535
PMID: 30458805 [Indexed for MEDLINE]

13. BMC Complement Altern Med. 2018 Oct 24;18(1):287. doi: 10.1186/s12906-018-2341-3.

Effects of **acupuncture** on nutritional state of patients with stable chronic obstructive pulmonary disease (COPD): re-analysis of COPD acupuncture trial, a randomized controlled trial.

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BACKGROUND: There are an increasing number of evidences that chronic obstructive pulmonary disease (COPD) is a systemic illness and that bodyweight loss is its prominent manifestation. We focused on the nutritional outcomes to find out the effectiveness of acupuncture on nutritional state of COPD patients and on their prognosis in our previous interventional study.
METHODS: The present study is re-analysis of our previous interventional study, COPD Acupuncture Trial (CAT) published in 2012. Data from CAT was re-analyzed in terms of nutritional status, inflammatory biomarkers, and prognostic index. Nutritional states were evaluated by the measurements of body weight, body composition, and muscle strength, and the nutritional hematological examination results (retinol-binding protein (RBP), prealbumin (PA), transferrin (Tf), and hemoglobin (Hb) in serum), and inflammation biomarkers such as carboxyhemoglobin (COHb), High sensitivity C-reactive protein (Hs-CRP), Tumor Necrosis Factor-alpha (TNF-α), Interleukin 6 (IL-6), and Serum Amyloid A (SAA) were measured. The BODE index was measured in terms of prognosis. These measurements were compared between the real acupuncture group (RAG) and the placebo acupuncture group (PAG). All data are presented as mean (SD) or mean (95% CI). The difference between baseline and final volumes was compared using analysis of covariance (ANCOVA). Moreover, correlations between nutritional hematological examination scores and inflammation biomarker parameters were assessed using Spearman's rank correlation coefficient.
RESULTS: After 12 weeks, the change in body weight was significantly greater in the RAG compared with the PAG (mean [SD] difference from baseline: 2.5 [0.4] in RAG vs - 0.5 [1.4] in PAG; mean difference between the groups: 3.00, 95% CI, 2.00 to 4.00 with ANCOVA). Patients in RAG also had improvements in the results of nutritional hematological examination (RBP, PA, Tf, Hb), Inflammation biomarkers (TNF-α, IL-6, SAA, Hs-CRP, COHb) and the BODE index.
CONCLUSION: This study demonstrated some clear evidences that acupuncture can be a useful adjunctive therapy to improve nutritional state of COPD patients.
TRIAL REGISTRATION: UMIN Clinical Trials Registry (UMIN000001277). Retrospectively registered.

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14. Cochrane Database Syst Rev. 2018 Oct 10;10:CD012290. doi: 10.1002/14651858.CD012290.pub2.

Active mind-body movement therapies as an adjunct to or in comparison with pulmonary rehabilitation for people with chronic obstructive pulmonary disease.

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BACKGROUND: Active mind-body movement therapies (AMBMTs), including but not limited to yoga, tai chi, and qigong, have been applied as exercise modalities for people with chronic obstructive pulmonary disease (COPD). AMBMT strategies have been found to be more effective than usual care; however, whether AMBMT is inferior, equivalent, or superior to pulmonary rehabilitation (PR) in people with COPD remains to be determined.
OBJECTIVES: To assess the effects of AMBMTs compared with, or in addition to, PR in the management of COPD.
SEARCH METHODS: We searched the Cochrane Airways Group Specialised Register of trials and major Chinese databases, as well as trial registries from inception to July 2017. In addition, we searched references of primary studies and review articles. We updated this search in July 2018 but have not yet incorporated these results.
SELECTION CRITERIA: We included (1) randomised controlled trials (RCTs) comparing AMBMT (i.e. controlled breathing and/or focused meditation/attention interventions for which patients must actively move their joints and muscles for at least four weeks with no minimum intervention frequency) versus PR (any inpatient or outpatient, community-based or home-based rehabilitation programme lasting at least four weeks, with no minimum intervention frequency, that included conventional exercise training with or without education or psychological support) and (2) RCTs comparing AMBMT + PR versus PR alone in people with COPD. Two independent review authors screened and selected studies for inclusion.
DATA COLLECTION AND ANALYSIS: Two review authors independently selected trials for inclusion, extracted outcome data, and assessed risk of bias. We contacted study authors if necessary to ask them to provide missing data. We calculated mean differences (MDs) using a random-effects model.
MAIN RESULTS: We included in the meta-analysis 10 studies with 762 participants across one or more comparisons. The sample size of included studies ranged from 11 to 206 participants. Nine out of 10 studies involving all levels of COPD severity were conducted in China with adults from 55 to 88 years of age, a higher proportion of whom were male (78%). Nine out of 10 studies provided tai chi and/or qigong programmes as AMBMT, and one study provided yoga. Overall, the term 'PR' has been uncritically applied in the vast majority of studies, which limits comparison of AMBMT and PR. For example, eight out of 10 studies considered walking training as equal to PR and used this as conventional exercise training within PR. Overall study quality for main comparisons was moderate to very low mainly owing to imprecision, indirectness (exercise component inconsistent with recommendations), and risk of bias issues. The primary outcomes for our review

were quality of life, dyspnoea, and serious adverse events.When researchers compared AMBMT versus PR alone (mainly unstructured walking training), statistically significant improvements in disease-specific quality of life (QoL) (St. George's Respiratory Questionnaire (SGRQ) total score) favoured AMBMT: mean difference (MD) -5.83, 95% confidence interval (CI) -8.75 to -2.92; three trials; 249 participants; low-quality evidence. The common effect size, but not the 95% CI around the pooled treatment effect, exceeded the minimal clinically important difference (MCID) of minus four. The COPD Assessment Test (CAT) also revealed statistically significant improvements favouring AMBMT over PR, with scores exceeding the MCID of three, with an MD of 6.58 units (95% CI -9.16 to - 4.00 units; one trial; 74 participants; low-quality evidence). Results show no between-group differences with regard to dyspnoea measured by the modified Medical Research Council Scale (MD 0.00 units, 95% CI -0.37 to 0.37; two trials; 127 participants; low-quality evidence), the Borg Scale (MD 0.44 units, 95% CI -0.88 to 0.00; one trial; 139 participants; low-quality evidence), or the Chronic Respiratory Questionnaire (CRQ) Dyspnoea Scale (MD -0.21, 95% CI -2.81 to 2.38; one trial; 11 participants; low-quality evidence). Comparisons of AMBMT versus PR alone did not include assessments of generic quality of life, adverse events, limb muscle function, exacerbations, or adherence.Comparisons of AMBMT added to PR versus PR alone (mainly unstructured walking training) revealed significant improvements in generic QoL as measured by Short Form (SF)-36 for both the SF-36 general health summary score (MD 5.42, 95% CI 3.82 to 7.02; one trial; 80 participants; very low-quality evidence) and the SF-36 mental health summary score (MD 3.29, 95% CI 1.45 to 4.95; one trial; 80 participants; very low-quality evidence). With regard to disease-specific QoL, investigators noted no significant improvement with addition of AMBMT to PR versus PR alone (SGRQ total score: MD -2.57, 95% CI -7.76 to 2.62 units; one trial; 192 participants; moderate-quality evidence; CRQ Dyspnoea Scale score: MD 0.04, 95% CI -2.18 to 2.26 units; one trial; 80 participants; very low-quality evidence). Comparisons of AMBMT + PR versus PR alone did not include assessments of dyspnoea, adverse events, limb muscle function, exacerbations, or adherence.
AUTHORS' CONCLUSIONS: Given the quality of available evidence, the effects of AMBMT versus PR or of AMBMT added to PR versus PR alone in people with stable COPD remain inconclusive. Evidence of low quality suggests better disease-specific QoL with AMBMT versus PR in people with stable COPD, and evidence of very low quality suggests no differences in dyspnoea between AMBMT and PR. Evidence of moderate quality shows that AMBMT added to PR does not result in improved disease-specific QoL, and evidence of very low quality suggests that AMBMT added to PR may lead to better generic QoL versus PR alone. Future studies with adequate descriptions of conventional exercise training (i.e. information on duration, intensity, and progression) delivered by trained professionals with a comprehensive understanding of respiratory physiology, exercise science, and the pathology of COPD are needed before definitive conclusions can be drawn regarding treatment outcomes with AMBMT versus PR or AMBMT added to PR versus PR alone for patients with COPD.

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15. J Bodyw Mov Ther. 2018 Oct;22(4):896-903. doi: 10.1016/j.jbmt.2017.11.001. Epub 2017 Nov 8.

Experiences of **hatha yogic exercises** among patients with obstructive pulmonary diseases: A qualitative study.

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BACKGROUND AND AIM: Obstructive pulmonary diseases can involve dyspnea and deconditioning. Hatha yogic exercises are a form of psychophysical attention-based activity. Research of experiences after participating in an adapted hatha yoga (YE) intervention remains limited. The aim of the present study was to explore the experiences of patients with obstructive pulmonary diseases (asthma and chronic obstructive pulmonary disease) in a 12-week hatha yoga intervention (YE).
METHOD: Fifteen patients (10 women and 5 men, median age = 61, range: 44-76 years) who had participated in YE were interviewed after the intervention. Interview data were analyzed using qualitative content analysis.
RESULTS: Three main categories emerged: "To focus and be aware of oneself", "To gain new knowledge through practice" and "To master one's own situation". The overall theme "From limitation to opportunity - to experience breathing as a tool in daily life" illustrates a learning process on different levels. The participants described improved physical symptoms and breathing techniques, greater energy/stamina and body awareness along with a new sense of control over their breathing in different situations.
CONCLUSIONS: Patients with obstructive pulmonary diseases may strengthen their self-awareness and improve control of symptoms and learning new ways of breathing after practicing YE, which may provide a tool to control disease symptoms in daily life. Trial registration number NCT02233114.

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16. Medicine (Baltimore). 2018 Oct;97(40):e12659. doi: 10.1097/MD.0000000000012659.

Effect of **Liuzijue Qigong** on patients with chronic obstructive pulmonary disease: Protocol for a systematic review and meta-analysis.

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality worldwide with a substantial and increasing social and economic burden. Liuzijue Qigong is a kind of traditional Chinese Qigong exercises that Traditional Chinese Medicine practitioners prescribe to individuals with COPD to strengthen the internal organs' function. Liuzijue Qigong was recommended for use in COPD rehabilitation, and some clinical trials indicate that Liuzijue Qigong would produce better functional capacity and quality of life of individuals with COPD. The objective of this study is to conduct a systematic review of the existing studies to assess effectiveness and safety of Liuzijue Qigong for the prevention or treatment of COPD in patients.
METHODS: We will perform the comprehensive literature search in English and Chinese electronic database. The publication period will be from inception to the search date. In addition, the clinical trial registries, dissertations, informal publication, grey literature, reference lists of studies, systematic reviews, and conference abstracts will also be collected. Two reviewers will identify relevant studies, extract data information, and then assess the methodical quality by the Cochrane risk of bias assessment tool. Only randomized controlled trials comparing Liuzijue Qigong against other intervention or nonintervention will be included. Data will be synthesized by either fixed-effect or random-effect model regarding to a heterogeneity test. The routine lung function, arterial blood gas tensions, partial pressure of carbon dioxide, functional capacity, 30 seconds sit-to-stand test, respiratory function, maximal inspiration pressure, maximal expiratory pressure, airway resistance, and specific airway conductance will be assessed as primary outcomes. The secondary outcomes involved dyspnea, and fatigue levels, respiratory muscle strength, upper and lower limb muscle strength, handgrip strength test, and health-related quality of life and safety. Meta-analysis will be performed by using Cochrane's Review Manager software (version 5.3.5).
RESULTS: This systematic review and meta-analysis will provide a high-quality synthesis and evaluate the efficacy and safety based on current relevant literature evidence of Liuzijue Qigong intervention for COPD patient.
CONCLUSION: Our systematic review will provide evidence to determine whether Liuzijue Qigong is an effective and safe approach to prevention and treatment of COPD patients.

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PMID: 30290646 [Indexed for MEDLINE]

17. Thorax. 2018 Oct;73(10):942-950. doi: 10.1136/thoraxjnl-2017-211417. Epub 2018 Jun 18.

Randomised controlled trial of adjunctive inspiratory muscle training for patients with COPD.

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Comment in
Thorax. 2018 Oct;73(10):900-901.

BACKGROUND: This study aimed to investigate whether adjunctive inspiratory muscle training (IMT) can enhance the well-established benefits of pulmonary rehabilitation (PR) in patients with COPD.
METHODS: 219 patients with COPD (FEV1: 42%±16% predicted) with inspiratory muscle weakness (PImax: 51±15 cm H2O) were randomised into an intervention group (IMT+PR; n=110) or a control group (Sham-IMT+PR; n=109) in this double-blind, multicentre randomised controlled trial between February 2012 and October 2016 (ClinicalTrials.gov NCT01397396). Improvement in 6 min walking distance (6MWD) was a priori defined as the primary outcome. Prespecified secondary outcomes included respiratory muscle function and endurance cycling time.
FINDINGS: No significant differences between the intervention group (n=89) and

the control group (n=85) in improvements in 6MWD were observed (0.3 m, 95% CI -13 to 14, p=0.967). Patients who completed assessments in the intervention group achieved larger gains in inspiratory muscle strength (effect size: 1.07, p<0.001) and endurance (effect size: 0.79, p<0.001) than patients in the control group. 75 s additional improvement in endurance cycling time (95% CI 1 to 149, p=0.048) and significant reductions in Borg dyspnoea score at isotime during the cycling test (95% CI -1.5 to -0.01, p=0.049) were observed in the intervention group. INTERPRETATION: Improvements in respiratory muscle function after adjunctive IMT did not translate into additional improvements in 6MWD (primary outcome). Additional gains in endurance time and reductions in symptoms of dyspnoea were observed during an endurance cycling test (secondary outcome) TRIAL REGISTRATION NUMBER: NCT01397396; Results.

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Conflict of interest statement: Competing interests: AM acknowledges a previous (now expired) beneficial interest in the POWERbreathe inspiratory muscle trainers in the form of a share of royalty income to the University of Birmingham, and a potential share of royalty income to Brunel University. In the past, she has also provided consultancy services to POWERbreathe International, but no longer does so. She is named on two patents relating to POWERbreathe products, including the device used in the present study, as well as being the author of two books on inspiratory muscle training. FM reports research support from Boehringer Ingelheim, GlaxoSmithKline, AstraZeneca, Grifols and Novartis, advisory board participation for Boehringer Ingelheim and GlaxoSmithKline, and speaking engagements for Boehringer Ingelheim, GlaxoSmithKline, AstraZeneca, Grifols and Novartis.

18. Medicine (Baltimore). 2018 Sep;97(39):e12461. doi: 10.1097/MD.0000000000012461.

Effects of the Chinese herb formula **Yufeining** on stable chronic obstructive pulmonary disease: A randomized, double-blind, placebo-controlled trial.

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BACKGROUND: A Chinese herb formula Yufeining (YFN) has showed promise in the

treatment of stable chronic obstructive pulmonary disease (COPD), less is known that the impact of YFN in combination with standard Western treatments on lung inflammation. This study evaluated the safety and efficacy of YFN as a treatment for stable COPD and as an anti-inflammatory agent.
METHODS: Sixty patients with stable COPD were randomly assigned to two treatment groups (YFN treatment, N = 30; placebo treatment, N = 30). Both groups received inhaled steroids and bronchodilators during an 8-week intervention, and patient status was assessed at 8 weeks later and 4 months after treatment. The primary outcome included clinical efficacy. The secondary outcomes involved CAT score, mMRC grade, six-minute walking distance (6MWD). IL-8, TNF-α, IL-17A, LTB4, TGF-β1 and CRP were also detection in peripheral serum, as well as adverse reaction conditions.
RESULTS: The YFN group demonstrated a significant improvement in clinical efficacy (compare 89.3% to 63.3% in the placebo group; $P < 0.05$). CAT scores and mMRC grades significantly decreased ($P < 0.05$, $P < 0.01$), and 6MWD significantly increased ($P<0.05$), after YFN treatment. The levels of IL-8, TNF-α, LTB4 and CRP decreased significantly after 8 weeks of treatment compared to baseline levels in both groups. Only in the YFN treatment group, the levels of IL-17A decreased significantly after treatment compared to baseline levels ($P < 0.05$). No changes were observed inTGF-β1 from pre-to post-treatment in either group ($P > 0.05$). Serum levels of IL-8, TNF-α, IL-17A, LTB4 and CRP decreased significantly after YFN treatment compared to the placebo group ($P < 0.05$).
CONCLUSION: A combinatorial treatment approach with YFN, inhaled steroids and bronchodilators produced a clinically effective treatment for stable COPD, leading to a significant decrease in circulating inflammatory mediators. The study appeared YFN was safety.
CLINICAL TRIAL REGISTRATION NUMBER: No. ChiCTR-IOR-17013577.

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PMID: 30278529 [Indexed for MEDLINE]

19. Complement Ther Med. 2018 Aug;39:36-42. doi: 10.1016/j.ctim.2018.05.007. Epub 2018 May 17.

A modified 6-form **Tai Chi** for patients with COPD.

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BACKGROUND AND OBJECTIVE: 24-form Tai Chi is a traditional exercise popular among old people in China, but it has some complex movements beyond of capabilities of patients with COPD. This study was to modify and simplify 24-form Tai Chi and evaluate effects of the modified Tai Chi on lung function, exercise capacity, dyspnea symptom and health status in patients with COPD.

METHODS: A two-step procedure was applied: an initial qualitative research module consisting of focus group discussion, expert consultation and patient interviews was conducted to simplified and modified 24-form Tai Chi for patients with COPD. Then, a randomized controlled trial consisting of 60 patients with II to IV COPD was conducted to evaluate effects of the modified Tai Chi on lung function (FEV1%), exercise capacity (Six minutes walking distance,6MWD), dyspnea symptom (Modified Medical Research Council Scale, mMRC) and health status (COPD Assessment Test, CAT). All measures were obtained at baseline, 3-month follow-up and 9-month follow-up.
RESULTS: A new simpler 6-form Tai Chi that combining characteristics of COPD, the experts' wisdom and patients' needs was developed. Patients with COPD can grasp it in about 3 h and participants showed 86.0% adherence to the Tai Chi training and no negative accidents occurred. Generalized estimating equations (GEE) showed that there were significant differences in FEV1%, 6MWD and CAT scores between modified Tai Chi (MTC) group and the control group over time (model group × time interaction $\chi2 = 13.68$, $P < 0.001$; $\chi2 = 192.39$, $P < 0.001$;$\chi2 = 6.05$, $P = 0.014$, respectively), however, no statistical significance in mMRC scores was found between the 2 groups over time (model group × time interaction $\chi2 = 3.54$, $P = 0.06$). The baseline of FEV1%,6MWD, mMRC scores and CAT scores are significant covariates for lung function, exercise capacity, dyspnea symptom and health status, respectively ($\chi2 = 149.43$, $P < 0.001$; $\chi2 = 5.78$, $P = 0.016$; $\chi2 = 66.71$, $P < 0.001$; $\chi2 = 81.83$, $P < 0.001$, respectively).
CONCLUSIONS: This modified 6-form Tai Chi routine is easy to grasp, easy to adhere to, safe to practice and effective to improve lung function, exercise capacity, health status and to prevent dyspnea symptom from getting worse for patients with COPD and it can be recommended as a suitable exercise therapy for them.

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PMID: 30012390 [Indexed for MEDLINE]

20. Disabil Rehabil. 2018 Aug;40(17):2025-2031. doi: 10.1080/09638288.2017.1323236. Epub 2017 May 8.

Effects of different physical therapy programs on perceived health status in acute exacerbation of chronic obstructive pulmonary disease patients: a randomized clinical trial.

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PURPOSE: To evaluate the repercussion of different physical therapy interventions on the perceived health status of chronic obstructive pulmonary disease (COPD)

patients during acute exacerbation.
MATERIALS AND METHODS: Randomized controlled trial. Patients were assigned to: control group (standard medical treatment), controlled breathing + range of motion exercises group or Resistance exercises group. Perceived health status was assessed at baseline and discharge using the EuroQol-5D (EQ-5D) questionnaire. Clinical profile of patients was evaluated at baseline for descriptive purposes.
RESULTS: Ninety patients were randomized into the groups. Perceived health status improved significantly in all groups. Significant differences were found in mobility, self-care and usual activities subscales of EQ-5D and Visual Analogue Scale between control and controlled breathing + range of motion exercises group. Significant differences were found in all variables except pain between control group and Resistance exercises group. Finally, usual care and anxiety/depression subscales of EQ-5D showed significant differences between controlled breathing + range of motion exercises group and Resistance exercises group, the improvements being greater in Resistance exercises group.
CONCLUSIONS: Physical therapy added to standard medical treatment of acute exacerbated COPD patients achieves a higher improvement in perceived health status than the prescription of standard medical treatment alone. Implications for Rehabilitation Physical therapy added to standard medical treatment in patients hospitalized due to acute exacerbation of chronic obstructive pulmonary disease achieves a higher improvement in the perceived health status than the prescription of standard medical treatment alone. Short duration physical therapy programs added to the standard care appear to be helpful in the management of acute exacerbations of chronic obstructive pulmonary disease patients.

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21. Clin Respir J. 2018 Jul;12(7):2178-2188. doi: 10.1111/crj.12905. Epub 2018 May 23.

Effects of inspiratory muscle training in COPD patients: A systematic review and meta-analysis.

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OBJECTIVES: In chronic obstructive pulmonary disease (COPD), quality of life and exercise capacity are altered in relationship to dyspnea. Benefits of inspiratory muscle training (IMT) on quality of life, dyspnea, and exercise capacity were demonstrated, but when it is associated to pulmonary rehabilitation (PR), its efficacy on dyspnea is not demonstrated. The aim of this systematic review with meta-analysis was to verify the effect of IMT using threshold devices in COPD patients on dyspnea, quality of life, exercise capacity, and inspiratory muscles strength, and the added effect on dyspnea of IMT associated with PR (vs. PR alone).
STUDY SELECTION: This systematic review and meta-analysis was conducted on the databases from PubMed, Science direct, Cochrane library, Web of science, and Pascal. Following key words were used: inspiratory, respiratory, ventilatory, muscle, and training. The searching period extended to December 2017. Two reviewers independently assessed studies quality.
RESULTS: Forty-three studies were included in the systematic review and thirty-seven studies in the meta-analysis. Overall treatment group consisted of six hundred forty two patients. Dyspnea (Baseline Dyspnea Index) is decreased after IMT. Quality of life (Saint George's Respiratory Questionnaire), exercise capacity (6 min walk test) and Maximal inspiratory pressure were increased after IMT. During PR, no added effect of IMT on dyspnea was found.
CONCLUSION: IMT using threshold devices improves inspiratory muscle strength, exercise capacity and quality of life, decreases dyspnea. However, there is no added effect of IMT on dyspnea during PR (compared with PR alone).

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22. Curr Med Res Opin. 2018 Jul;34(7):1245-1251. doi: 10.1080/03007995.2017.1416344. Epub 2018 Jan 18.

Pelargonium sidoides preparation EPs 7630 in COPD: health-related quality-of-life and other patient-reported outcomes in adults receiving add-on therapy.

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OBJECTIVE: Patient-reported outcomes (PRO) such as health-related quality-of-life (HRQoL) belong to the most important criteria for the evaluation of medical therapies in clinical trials or practice-based benefit assessments. This study, therefore, revisited results of an earlier published clinical trial investigating the effects of the herbal drug preparation from the roots of Pelargonium sidoides EPs 7630, administered as add-on therapy in patients suffering from chronic obstructive pulmonary disease (COPD), with respect to HRQoL and other PRO.

METHODS: A total of 199 adults diagnosed with COPD stages II/III and receiving standard treatment according to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) were randomly assigned to add-on therapy with EPs 7630 or placebo for 24 weeks. HRQoL (disease-specific St. George's Respiratory Questionnaire, SGRQ; current HRQoL state according to the EuroQuol visual analog scale, EQ VAS) and PRO (Integrative Medicine Outcomes Scale, IMOS; Integrative Medicine Patient Satisfaction Scale, IMPSS; symptom severity score of cough, sputum production and sternal pain while coughing; duration of inability to work) were assessed at each study visit or documented daily by the patient in a patient diary, respectively.
RESULTS: At week 24, all HRQoL and PRO measures showed a more pronounced improvement under EPs 7630 than under placebo (EQ VAS, $p < .001$; SGRQ total score, $p < .001$; symptom severity score of cough, sputum production, and sternal pain while coughing, $p = .021$; duration of inability to work, $p = .004$; two-sided t-test each; IMOS, $p < .001$, IMPSS, $p < .001$, two-sided Mantel-Haenszel test each). Moreover, the difference seen for the SGRQ exceeded the SGRQ minimal clinically important difference (MCID) threshold of 4 points.
CONCLUSIONS: Add-on therapy with EPs 7630 led to an improvement in HRQoL and other PRO in adult patients with COPD compared to placebo while showing a good long-term tolerability.

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PMID: 29231073 [Indexed for MEDLINE]

23. J Altern Complement Med. 2018 Jul;24(7):677-683. doi: 10.1089/acm.2017.0390. Epub 2018 Mar 29.

The Clinical Effects of Manipulative Therapy in People with Chronic Obstructive Pulmonary Disease.

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OBJECTIVES: This study aimed to determine the effects of manipulative therapies (MT), including spinal manipulation, and diaphragmatic release techniques on lung function, exercise capacity, symptoms, and health-related quality of life (HRQOL) in people with chronic obstructive pulmonary disease (COPD).
DESIGN: Systematic review.
PARTICIPANTS: People diagnosed with COPD.
INTERVENTION: Randomized controlled trials of MT (either with or without pulmonary rehabilitation [PR]) compared to other treatments (soft tissue [ST] therapy or sham therapy) applied in people with COPD were identified following the search of seven databases. Two reviewers independently assessed study quality

and extracted data.
OUTCOME MEASURES: Lung function, exercise capacity, symptoms, and HRQOL.
RESULTS: Four studies were included, with a total of 68 participants. The heterogeneity between treatments prevented meta-analysis. There was no beneficial effect on spirometry measures of lung function with MT. MT combined with PR improved exercise capacity by 48-49 m more than ST therapy plus PR. Less dyspnea was reported with MT and ST therapy compared to ST therapy alone ($p = 0.01$), but there was no effect on HRQOL, or symptoms of anxiety or depression.
CONCLUSIONS: In people with COPD, MT (either with or without PR) improved functional exercise capacity, but had no effect on lung function, or HRQOL. Further research is required to determine the underlying mechanism of this treatment approach and its relationship to exercise capacity.

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PMID: 29595991 [Indexed for MEDLINE]

24. Medicine (Baltimore). 2018 Jun;97(25):e11199. doi: 10.1097/MD.0000000000011199.

Transcutaneous electric nerve stimulation over acupoints for chronic obstructive pulmonary disease: Protocol for a systematic review and meta-analysis.

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BACKGROUND: There is a limited evidence concerning the efficacy of transcutaneous electric nerve stimulation over acupoints (Acu-TENS) for chronic obstructive pulmonary disease (COPD). Thus, this review aims to systematically determine the effect of Acu-TENS on COPD.
METHODS: PubMed, Embase, The Cochrane Library, Web of Science, Chinese Biomedical Literature Database, China National Knowledge Infrastructure, Chongqing VIP, and Wanfang Data will be searched from their inception to May 10, 2018. Randomized controlled trials that evaluated the effect of Acu-TENS on patients with COPD will be included. The primary outcome measures will include 6-minute walk distance and dyspnea visual analog scale scores. The secondary outcome measures will include lung function and St George's Respiratory Questionnaire. Study selection, data extraction, and risk of bias assessment will be independently undertaken, respectively. Statistical analysis will be conducted by RevMan software (version 5.3).
RESULTS: This systematic review will provide a detailed summary of current evidences related to the efficacy of Acu-TENS in improving exercise capacity, breathlessness, quality of life, and lung function of patients with COPD.
CONCLUSION: This evidence may be useful to clinicians, patients, and health policy makers with regard to the use of Acu-TENS in the treatment of COPD.

ETHICS AND DISSEMINATION: This review will not gather original data; hence, ethical approval is not required. The results will be disseminated through a peer-reviewed publication or conference presentations.

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PMID: 29924042 [Indexed for MEDLINE]

25. Int J Chron Obstruct Pulmon Dis. 2018 May 25;13:1713-1726. doi: 10.2147/COPD.S165593. eCollection 2018.

Effectiveness of **water-based Liuzijue exercise** on respiratory muscle strength and peripheral skeletal muscle function in patients with COPD.

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Objects: The purpose of this study was to quantitatively assess the effects of water-based Liuzijue exercise on patients with COPD and compare it with land-based Liuzijue exercise.
Materials and methods: Participants were randomly allocated to one of three groups: the water-based Liuzijue exercise group (WG), the land-based Liuzijue exercise group (LG), and the control group (CG). CG participants accepted no exercise intervention, while training groups performed Liuzijue exercise according to Health Qigong Liuzijue (People's Republic of China) in different environments for 60-min sessions twice a week for 3 months.
Results: Of the 50 patients enrolled, 45 (90%) completed the 3-month intervention. The CG showed decreased expiratory muscle strength, extensor and flexor endurance ratio (ER) of the elbow joints and flexor peak torque (PT), total work (TW), and ER of the knee joints ($p<0.05$). Both training groups showed improved respiratory muscle strength, which differed from the CG ($p<0.001$). In addition, extensor and flexor TW of the elbow joints in the training groups were increased ($p<0.01$), and the WG differed from the CG in extensor TW and ER and flexor TW ($p<0.01$), while the LG differed from the CG in flexor TW and extensor ER ($p<0.05$). PT, PT/body weight (BW), and TW in the knee joint extensor in the training groups were increased as well (PT and PT/BW: $p<0.05$, TW: $p<0.01$), and the WG differed from the CG in terms of knee joints outcomes, while the LG differed from the CG in flexor TW only ($p<0.05$).
Conclusion: Water-based Liuzijue exercise has beneficial effects on COPD patients' respiratory muscle strength and peripheral skeletal muscle function, and additional benefits may exist in endurance of upper limbs and strength and endurance of lower limbs when compared with land-based Liuzijue exercise.

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26. Biomed Res Int. 2018 May 20;2018:3026726. doi: 10.1155/2018/3026726. eCollection 2018.

Acupuncture Therapy for Functional Effects and Quality of Life in COPD Patients: A Systematic Review and Meta-Analysis.

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Objective: This study aimed to evaluate the efficacy and safety of acupuncture therapy (AT) for improving functional effects and quality of life in COPD patients.
Methods: PubMed, Embase, Cochrane Library, Web of Science, Chinese Biomedical Literature Database (CBM), China National Knowledge Infrastructure (CNKI), Chongqing VIP (CQVIP), and Wanfang Data were searched. The randomized controlled trials (RCTs) evaluating the effect of AT on COPD patients were included. Primary outcome measures included six-minute walk distance (6MWD) and St. George's Respiratory Questionnaire (SGRQ). Study selection, data extraction, and risk of bias assessment were independently conducted, respectively. Statistical analysis was conducted by RevMan software (version 5.3) and Stata software (version 12.0).
Results: Nineteen studies (1298 participants) were included. 6MWD improved more (MD: 47.84; 95% CI: 23.33 to 72.35; Z = 3.83, P = 0.0001) and effective rate was higher (OR: 2.26; 95% CI: 1.43 to 3.58; Z = 3.48, P = 0.0005) in the experimental group compared to the control group. Symptom domain scores (MD: -24.86; 95% CI: -32.17 to -17.55; Z = 6.66, P < 0.00001), activity domain scores (MD: -16.52; 95% CI: -22.57 to -10.47; Z = 5.36, P < 0.00001) and impact domain scores (MD: -13.07; 95% CI: -17.23 to -8.92; Z = 6.16, P < 0.00001) of SGRQ in the experimental group improved more compared to the control group. There was no significant improvement in SGRQ total scores between two groups. The improvement of FEV1 was not significant between two groups, yet subgroup analysis showed that patients treated with AT adjunctive to other treatments improved more in FEV1 (MD: 0.41; 95% CI: 0.28 to 0.54; Z = 6.01, P < 0.00001) compared to those treated with other treatments alone.

Conclusion: AT may be effective in improving functional effects and quality of life in COPD patients. Besides, AT may also improve pulmonary function of patients with COPD. However, further high-quality RCTs are needed to confirm the efficacy and safety of AT for COPD patients.

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PMID: 29888257 [Indexed for MEDLINE]

27. Chest. 2018 May;153(5):1116-1124. doi: 10.1016/j.chest.2018.01.053. Epub 2018 Apr 3.

Tai Chi and Pulmonary Rehabilitation Compared for Treatment-Naive Patients With COPD: A Randomized Controlled Trial.

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Chest. 2018 Sep;154(3):733-734.

BACKGROUND: In COPD, functional status is improved by pulmonary rehabilitation (PR) but requires specific facilities. Tai Chi, which combines psychological treatment and physical exercise and requires no special equipment, is widely practiced in China and is becoming increasingly popular in the rest of the world. We hypothesized that Tai Chi is equivalent (ie, difference less than ±4 St. George's Respiratory Questionnaire [SGRQ] points) to PR.
METHODS: A total of 120 patients (mean FEV1, 1.11 ± 0.42 L; 43.6% predicted) bronchodilator-naive patients were studied. Two weeks after starting indacaterol 150 µg once daily, they randomly received either standard PR thrice weekly or group Tai Chi five times weekly, for 12 weeks. The primary end point was change in SGRQ prior to and following the exercise intervention; measurements were also made 12 weeks after the end of the intervention.
RESULTS: The between-group difference for SGRQ at the end of the exercise interventions was -0.48 (95% CI PR vs Tai Chi, -3.6 to 2.6; P = .76), excluding a difference exceeding the minimal clinically important difference. Twelve weeks later, the between-group difference for SGRQ was 4.5 (95% CI, 1.9 to 7.0; P < .001), favoring Tai Chi. Similar trends were observed for 6-min walk distance; no

change in FEV1 was observed.
CONCLUSIONS: Tai Chi is equivalent to PR for improving SGRQ in COPD. Twelve weeks after exercise cessation, a clinically significant difference in SGRQ emerged favoring Tai Chi. Tai Chi is an appropriate substitute for PR.
TRIAL REGISTRY: ClinicalTrials.gov; No.: NCT02665130; URL: www.clinicaltrials.gov.

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PMID: 29625777 [Indexed for MEDLINE]

28. Complement Ther Clin Pract. 2018 May;31:64-70. doi: 10.1016/j.ctcp.2018.01.010. Epub 2018 Feb 6.

The effect of progressive muscle relaxation on the management of fatigue and quality of sleep in patients with chronic obstructive pulmonary disease: A randomized controlled clinical trial.

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OBJECTIVE: To assess the effect of progressive muscle relaxation (PMR) on fatigue and sleep quality of patients with chronic obstructive pulmonary disease (COPD) stages 3 and 4.
MATERIALS AND METHODS: The pretest posttest clinical trial recruited 91 patients COPD grades 3 and 4. Following random assignment of subjects, the treatment group (n = 45) performed PMR for eight weeks and the control group (n = 46) received routine cares. At baseline and after the intervention, fatigue and sleep quality was assessed. Data obtained were analyzed in SPSS.
RESULTS: It was determined that PMR decreased patients' fatigue level and improved some sleep quality subscales including subjective sleep quality, sleep latency, sleep duration and habitual sleep efficiency, but no improvement was found in global sleep quality and other sleep subscales.

CONCLUSION: An eight-week home-based PMR program can be effective in reducing fatigue and improving certain subscales of sleep quality in patients with COPD stages 3,4. (IRCT2016080124080N3).

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29. Int J Chron Obstruct Pulmon Dis. 2018 Apr 17;13:1239-1250. doi: 10.2147/COPD.S159042. eCollection 2018.

Effectiveness of **meditative movement** on COPD: a systematic review and meta-analysis.

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Background: The effectiveness of meditative movement (tai chi, yoga, and qigong) on COPD remained unclear. We undertook a systematic review and meta-analysis to determine the effectiveness of meditative movement on COPD patients.
Methods: We searched PubMed, Web of Science, EMBASE, and the Cochrane Center Register of Controlled Trials for relevant studies. The methods of standard meta-analysis were utilized for identifying relevant researches (until August 2017), quality appraisal, and synthesis. The primary outcomes were the 6-minute walking distance (6MWD), lung function, and dyspnea levels.
Results: Sixteen studies involving 1,176 COPD patients were included. When comparing with the control group, the 6MWD was significantly enhanced in the treatment group (3 months: mean difference [MD]=25.40 m, 95% CI: 16.25 to 34.54; 6 months: MD=35.75 m, 95% CI: 22.23 to 49.27), as well as functions on forced expiratory volume in 1 s (FEV1) (3 months: MD=0.1L, 95% CI: 0.02 to 0.18; 6 months: MD=0.18L, 95% CI: 0.1 to 0.26), and FEV1 % predicted (3 months: 4L, 95% CI: 2.7 to 5.31; 6 months: MD=4.8L, 95% CI: 2.56 to 7.07). Quality of life for the group doing meditative movement was better than the control group based on the Chronic Respiratory Disease Questionnaire dyspnea score (MD=0.9 units, 95% CI: 0.51 to 1.29) and fatigue score (MD=0.75 units, 95% CI: 0.42 to 1.09) and the total score (MD=1.92 units, 95% CI: 0.54 to 3.31).
Conclusion: Meditative movement may have the potential to enhance lung function and physical activity in COPD patients. More large-scale, well-designed,

multicenter, randomized controlled trials should be launched to evaluate the long-range effects of meditative movement.

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30. Phys Ther. 2018 Mar 1;98(3):191-204. doi: 10.1093/ptj/pzx122.

Outcome Measures Used in Pulmonary Rehabilitation in Patients With Acute Exacerbation of Chronic Obstructive Pulmonary Disease: A Systematic Review.

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Background: Conflicting results about the effects of community-based pulmonary rehabilitation in acute exacerbations of chronic obstructive pulmonary disease (AECOPD) exist, possibly because the variety of outcome measures used and the lack of appropriate measurement properties hinder the development of pulmonary rehabilitation guidelines.
Purpose: The purpose of this study was to identify and review the measurement properties of patient-reported outcome measures (PROMs) and clinical outcome measures of AECOPD that are used in pulmonary rehabilitation and that can be easily applied in a community setting.
Data Sources: PubMed, Web of Science, Scopus, and CINAHL were searched up to July 1, 2016.
Study Selection: Phase 1 identified outcome measures used in pulmonary rehabilitation for AECOPD. Phase 2 reviewed the measurement properties of the identified outcome measures.
Data Extraction: One reviewer extracted the data and 2 reviewers independently assessed the methodological quality of the studies and the measurement properties of the outcome measures by using the Consensus-Based Standards for the Selection of Health Status Measurement Instruments (COSMIN) recommendations.
Data Synthesis: Twenty-three PROMs and 18 clinical outcome measures were found. The outcome measures most used were the St George Respiratory Questionnaire (n = 15/37 studies) and the 6-minute walk test (n = 21/37 studies). Thirty-two studies described the measurement properties of 22 PROMs and 7 clinical outcome measures. The methodological quality of the studies was mostly poor, and the measurement

properties were mostly indeterminate. The outcome measure exhibiting more robust properties was the COPD Assessment Test.
Limitations: A Number of studies were not found with the validated search strategy used and were included a posteriori; the fact that 3 studies presented combined results- for patients who were stable and patients with exacerbation-affected the conclusions that can be drawn.
Conclusions: A Large variety of outcome measures have been used; however, studies on their measurement properties are needed to enhance the understanding of community pulmonary rehabilitation for AECOPD.

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31. Complement Ther Clin Pract. 2018 Feb;30:33-37. doi: 10.1016/j.ctcp.2017.11.006. Epub 2017 Nov 11.

Efficacy of **yoga training** in chronic obstructive pulmonary disease patients: A systematic review and meta-analysis.

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OBJECTIVES: To evaluate the impact of yoga training in patients with chronic obstructive pulmonary disease (COPD).
METHOD: A literature search was performed in PubMed, Cochrane Library, Embase, CINAHL, and Web of Science for relevant studies published before June 2017. Quality assessment, sensitivity analysis and heterogeneity were performed. Stata12.0 software was used for statistical analysis.
RESULTS: Ten studies were eligible for this analysis. There were significantly greater improvements in 6MWD (p = 0.000), Borg scale scores (p = 0.018), FEV1 Value (p = 0. 013), PaCO2 (p = 0.037), SGRQ scores (p = 0. 000) and CAT scores (p = 0.009) in yoga training patients. No statistically significant difference was observed in the FEV1/FVC (p = 0.75), FEV1 predicted value (p = 0.057) and FVC (p = 0.05).
CONCLUSIONS: This meta-analysis indicates that yoga training can be an acceptable and appropriated adjunctive rehabilitation program for COPD patients.

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32. Eur Respir J. 2018 Jan 25;51(1). pii: 1702000. doi: 10.1183/13993003.02000-2017. Print 2018 Jan.

Inspiratory muscle training does not improve clinical outcomes in 3-week COPD rehabilitation: results from a randomised controlled trial.

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The value of inspiratory muscle training (IMT) in pulmonary rehabilitation in chronic obstructive pulmonary disease (COPD) is unclear. The RIMTCORE (Routine Inspiratory Muscle Training within COPD Rehabilitation) randomised controlled trial examined the effectiveness of IMT added to pulmonary rehabilitation.In total, 611 COPD patients (Global Initiative for Chronic Obstructive Lung Disease stage II-IV) received a 3-week inpatient pulmonary rehabilitation, of which 602 patients were included in the intention-to-treat analyses. The intervention group (n=300) received highly intensive IMT and the control group (n=302) received sham IMT. The primary outcome was maximal inspiratory pressure (PImax). The secondary outcomes were 6-min walk distance, dyspnoea, quality of life and lung function. Outcomes were assessed pre- and post-pulmonary rehabilitation. ANCOVA was used.The intervention group showed higher effects in PImax ($p<0.001$) and forced inspiratory volume in 1 s ($p=0.013$). All other outcomes in both study groups improved significantly, but without further between-group differences. Sex and pulmonary rehabilitation admission shortly after hospitalisation modified quality of life effects.IMT as an add-on to a 3-week pulmonary rehabilitation improves inspiratory muscle strength, but does not provide additional benefits in terms of exercise capacity, quality of life or dyspnoea. A general recommendation for COPD patients to add IMT to a 3-week pulmonary rehabilitation cannot be made.

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33. Eur Respir J. 2018 Jan 25;51(1). pii: 1701107. doi: 10.1183/13993003.01107-2017. Print 2018 Jan.

Effects of inspiratory muscle training on dyspnoea in severe COPD patients during pulmonary rehabilitation: controlled randomised trial.

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The benefit of inspiratory muscle training (IMT) combined with a pulmonary rehabilitation programme (PRP) is uncertain. We aimed to demonstrate that, in severe and very severe chronic obstructive pulmonary disease (COPD) patients, IMT performed during a PRP is associated with an improvement of dyspnoea.In a single-blind randomised controlled trial, 150 severe or very severe COPD patients were allocated to follow PRP+IMT versus PRP alone. The evaluations were performed at inclusion and after 4 weeks. The primary outcome was the change in dyspnoea using the Multidimensional Dyspnoea Profile questionnaire at the end of a 6-min walk test (6MWT) at 4 weeks. Secondary outcomes were changes in dyspnoea using the Borg (end of the 6MWT) and modified Medical Research Council scales and in functional parameters (maximal inspiratory pressure (PImax), inspiratory capacity, 6MWT and quality of life). All analyses were performed on an intention-to-treat basis.Dyspnoea decreased significantly in both groups; however, the improvement of dyspnoea was not statistically different between the two groups. We only found a statistically significant greater increase of PImax after IMT+PRP than after PRP alone.In this trial including severe or very severe COPD patients, we did not find a significant benefit of IMT during PRP+IMT as compared to PRP alone on dyspnoea, despite a significantly higher improvement of PImax in the IMT group.

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34. Med J Aust. 2018 Jan 15;208(1):29-34.

Diagnosing COPD and supporting smoking cessation in general practice: evidence-practice gaps.

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OBJECTIVES: To review the accuracy of diagnoses of chronic obstructive pulmonary disease (COPD) in primary care in Australia, and to describe smokers' experiences with and preferences for smoking cessation.
DESIGN, SETTING AND PARTICIPANTS: Patients were invited to participate if they were at least 40 years old and had visited participating general practice clinics in Melbourne at least twice during the previous 12 months, reported being current or ex-smokers with a smoking history of at least 10 pack-years, or were being managed for COPD. Interviews based on a structured questionnaire and case finding (FEV1/FEV6 measurement) were followed, when appropriate, by spirometry testing and assessment of health-related quality of life, dyspnoea and symptoms.
RESULTS: 1050 patients attended baseline interviews (February 2015 - April 2017) at 41 practices. Of 245 participants managed for COPD, 130 (53.1%) met the spirometry-based definition (post-bronchodilator FEV1/FVC < 0.7) or had a clinical correlation; in 37% of cases COPD was not confirmed, and no definitive result was obtained for 9.8% of patients. Case finding and subsequent spirometry testing identified 142 new COPD cases (17.6% of participants without prior diagnosis; 95% CI, 15.1-20.5%). 690 participants (65.7%) were current smokers, of whom 360 had attempted quitting during the previous 12 months; 286 (81.0% of those attempting to quit) reported difficulties during previous quit attempts. Nicotine replacement therapy (205, 57.4%) and varenicline (110, 30.8%) were the most frequently employed pharmacological treatments; side effects were common. Hypnotherapy was the most popular non-pharmacological option (62 smokers, 17%);

e-cigarettes were tried by 38 (11%). 187 current smokers (27.6%) would consider using e-cigarettes in future attempts to quit.
CONCLUSIONS: COPD was both misdiagnosed and missed. Case finding and effective use of spirometry testing could improve diagnosis. Side effects of smoking cessation medications and difficulties during attempts to quit smoking are common. Health professionals should emphasise evidence-based treatments, and closely monitor quitting difficulties and side effects of cessation aids.
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35. J Clin Nurs. 2017 Dec;26(23-24):4830-4838. doi: 10.1111/jocn.13841. Epub 2017 Aug 13.

The effects of threshold inspiratory muscle training in patients with chronic obstructive pulmonary disease: A randomised experimental study.

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AIMS AND OBJECTIVES: To investigate the effects of threshold inspiratory muscle training in patients with stages II through IV chronic obstructive pulmonary disease using maximum inspiratory pressure, baseline dyspnoea index, 6-minute walk test and quality of life.
BACKGROUND: A threshold inspiratory muscle training device provides pressure for inspiratory muscle strength, but there is limited information on the effects of threshold inspiratory muscle training starting at low pressure training.
DESIGN: Randomised experimental design.
METHODS: A total of 55 patients completed this study between September 2013-April 2014. The experimental group (n = 27) was provided medical treatment and routine care, along with five sessions of threshold inspiratory muscle training per week (21-30 min per session), accompanied by a progressive increase in the pressure threshold over a period of 8 weeks. The control group (n = 28) was provided medical treatment and routine care only, without intervention. In the inferential analysis, p values <.05 were considered to indicate statistical significance.
RESULTS: After 8 weeks in the experimental group, mean maximum inspiratory pressure improved by -17.6 ± 0.18 cmH2 O, mean 6-minute walk test improved by 47.8 ± 1.46 m, and the baseline dyspnoea index increased from 4.48 ± 2.12 points to 9.0 ± 2.27 points. These data and quality of life were statistically different between the experimental and the control groups (p < .05).
CONCLUSIONS: The threshold inspiratory muscle training can reduce patients' difficulties with respect to daily activities, thereby reducing the burden on the

family, and improving prognosis in patients with moderate-to-very severe chronic obstructive pulmonary disease.

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36. Clin Respir J. 2017 Nov;11(6):820-832. doi: 10.1111/crj.12422. Epub 2015 Dec 22.

Arm strength training improves activities of daily living and occupational performance in patients with COPD.

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OBJECTIVES: Arm strength training may improve functional performance for patients with chronic obstructive pulmonary disease (COPD). This trial investigated the effects of arm strength training on arm exercise capacity, activities of daily living (ADL) and occupational performance in patients with COPD.
METHODS: These was a randomized controlled trial in an outpatient clinic. Forty-two stable patients with COPD were randomly assigned into treatment and control groups. The treatment group underwent an 8-week (23 sessions) arm strength training programme. Both groups completed daily breathing exercises at home. Tests included hand grip strength, arm ergometer test, the Glittre-ADL and ADL Simulation tests and measures included the Milliken ADL Scale (MAS) and the Canadian Occupational Performance Measure (COPM).
RESULTS: Statistically significant increases were detected in hand grip strength and %hand grip strength values, peak arm ergometer workload and the number of ADL simulation test cycles for the treatment group ($P < 0.05$). Significant decreases were also found in dyspnea and arm fatigue perception during arm ergometer test, and heart rate and dyspnea perception during Glittre-ADL test in the treatment group ($P < 0.05$). The treatment group also showed significant increases in MAS-house cleaning and laundry and MAS-other activities integrated scores and COPM-performance and satisfaction scores ($P < 0.05$).
CONCLUSIONS: Arm strength training increases peripheral muscle strength, arm exercise capacity, ADL performance and patients' ADL performance satisfaction. Training decreases dyspnea and arm fatigue perception during supported arm exercises, and dyspnea perception during ADL. Arm strength training is a reliable and feasible treatment for COPD patients.

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37. Respir Med. 2017 Nov;132:84-91. doi: 10.1016/j.rmed.2017.10.001. Epub 2017 Oct 4.

Effects of two types of equal-intensity inspiratory muscle training in stable patients with chronic obstructive pulmonary disease: A randomised controlled trial.

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PURPOSE: We conducted a randomised controlled trial to assess the effects of daily breathing pattern changes to stable patients with COPD excluding the confounding factors of inspiratory muscle mobilization, by ensuring the load intensities of two inspiratory training devices were equal.
PATIENTS AND METHODS: Sixty patients with COPD were randomised to three groups: resistive-IMT group (T-IMT, 21 patients), threshold-IMT (R-IMT, 19 patients), and a control group (20 patients). Inspiratory load intensity for both methods was set at 60% of maximal inspiratory pressure (MIP), a measure of inspiratory muscle strength, which, along with health-related quality of life (HRQoL), degree of dyspnoea, and exercise capacity, were conducted before and after 8 weeks of daily IMT.
RESULTS: At 8 weeks, there was no significantly difference of MIP between the R- and T-IMT groups ($P > 0.05$). Chronic Respiratory Disease Questionnaire and Transition Dyspnea Index scores improved significantly after each training program compared with controls ($P < 0.05$), and R-IMT was significant better ($P < 0.05$). R-IMT was better than T-IMT in performance of exercise ($P < 0.05$).
CONCLUSIONS: In summary, in clinically stable patients with COPD, 8 weeks of R-IMT was superior to 8 weeks of equal-intensity T-IMT in improving HRQoL, degree of dyspnoea, and exercise capacity.

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38. Clin Interv Aging. 2017 Oct 12;12:1705-1715. doi: 10.2147/CIA.S145688.
eCollection 2017.

Comparative study of two different respiratory training protocols in elderly patients with chronic obstructive pulmonary disease.

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AIM: The aim of the present study was to compare threshold inspiratory muscle training (IMT) and expiratory muscle training (EMT) in elderly male patients with moderate degree of COPD.
MATERIALS AND METHODS: Forty male patients with moderate degree of COPD were recruited for this study. They were randomly divided into two groups: the IMT group who received inspiratory training with an intensity ranging from 15% to 60% of their maximal inspiratory pressure, and the EMT group who received expiratory training with an equal intensity which was adjusted according to the maximal expiratory pressure. Both groups received training three times per week for 2 months, in addition to their prescribed medications.
RESULTS: Both IMT and EMT groups showed a significant improvement in forced vital capacity, forced expiratory volume in the first second, forced expiratory volume in the first second% from the predicted values, and forced vital capacity% from the predicted value, with no difference between the groups. Both types of training resulted in a significant improvement in blood gases (SaO2%, PaO2, PaCO2, and HCO3), with the inspiratory muscle group showing the best results. Both groups showed a significant improvement in the 6-min walking distance: an increase of about 25% in the inspiratory muscle group and about 2.5% in the expiratory muscle group.
CONCLUSION: Both IMT and EMT must be implemented in pulmonary rehabilitation programs in order to achieve improvements in pulmonary function test, respiratory muscle strength, blood oxygenation, and 6-min walking distance.

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Cycle ergometer and inspiratory muscle training offer modest benefit compared with cycle ergometer alone: a comprehensive assessment in stable COPD patients.

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BACKGROUND: Cycle ergometer training (CET) has been shown to improve exercise performance of the quadriceps muscles in patients with COPD, and inspiratory muscle training (IMT) may improve the pressure-generating capacity of the inspiratory muscles. However, the effects of combined CET and IMT remain unclear and there is a lack of comprehensive assessment.
MATERIALS AND METHODS: Eighty-one patients with COPD were randomly allocated to three groups: 28 received 8 weeks of CET + IMT (combined training group), 27 received 8 weeks of CET alone (CET group), and 26 only received 8 weeks of free walking (control group). Comprehensive assessment including respiratory muscle strength, exercise capacity, pulmonary function, dyspnea, quality of life, emotional status, nutritional status, and body mass index, airflow obstruction, and exercise capacity index were measured before and after the pulmonary rehabilitation program.
RESULTS: Respiratory muscle strength, exercise capacity, inspiratory capacity, dyspnea, quality of life, depression and anxiety, and nutritional status were all improved in the combined training and CET groups when compared with that in the control group ($P<0.05$) after pulmonary rehabilitation program. Inspiratory muscle strength increased significantly in the combined training group when compared with that in the CET group (ΔPImax [maximal inspiratory pressure] 5.20±0.89 cmH2O vs 1.32±0.91 cmH2O; $P<0.05$). However, there were no significant differences in the other indices between the two groups ($P>0.05$). Patients with weakened respiratory muscles in the combined training group derived no greater benefit than those without respiratory muscle weakness ($P>0.05$). There were no significant differences in these indices between the patients with malnutrition and normal nutrition after pulmonary rehabilitation program ($P>0.05$).
CONCLUSION: Combined training is more effective than CET alone for increasing inspiratory muscle strength. IMT may not be useful when combined with CET in patients with weakened inspiratory muscles. Nutritional status had slight impact on the effects of pulmonary rehabilitation. A comprehensive assessment approach can be more objective to evaluate the effects of combined CET and IMT.

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40. J Altern Complement Med. 2017 Sep;23(9):696-704. doi: 10.1089/acm.2017.0102. Epub 2017 Jul 17.

Effect of **Yoga Breathing** (Pranayama) on Exercise Tolerance in Patients with Chronic Obstructive Pulmonary Disease: A Randomized, Controlled Trial.

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OBJECTIVE: Pulmonary rehabilitation improves exercise tolerance in patients with chronic obstructive pulmonary disease (COPD). However, many patients do not have access to pulmonary rehabilitation programs. We hypothesized that an alternative to pulmonary rehabilitation to improve exercise tolerance is the practice of pranayama, or yoga breathing, which could be done independently at home. We also sought to determine whether yoga nonprofessionals could adequately teach pranayama to patients.
DESIGN: Proof-of-concept, randomized, double-blind, controlled pilot trial.
SETTINGS/LOCATION: Two academic pulmonary practices.
SUBJECTS: Forty-three patients with symptomatic, moderate-to-severe COPD.
INTERVENTIONS: Twelve weeks of pranayama plus education versus education alone. Two yoga professionals trained the research coordinators to conduct all pranayama teaching and monitored the quality of the teaching and the practice of pranayama by study participants.
OUTCOME MEASURES: The primary outcome was a change in the 6-min walk distance (6MWD). Secondary outcomes included changes in lung function, markers of oxidative stress and systemic inflammation, and measures of dyspnea and quality of life.
RESULTS: The 6MWD increased in the pranayama group (least square mean [95% confidence interval] = 28 m [-5 to 61]) and decreased in the control group (-15 m [-47 to 16]), with a nearly significant treatment effect (p = 0.06) in favor of pranayama. Pranayama also resulted in small improvements in inspiratory capacity and air trapping. Both groups had significant improvements in various measures of

symptoms, but no overall differences in respiratory system impedance or markers of oxidative stress or systemic inflammation.
CONCLUSION: This pilot study successfully demonstrated that pranayama was associated with improved exercise tolerance in patients with COPD. Lay personnel were able to adequately teach patients to practice pranayama. These results suggest that pranayama may have significant clinical benefits for symptomatic patients with COPD, a concept that needs to be confirmed in future, larger clinical trials.

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41. BMJ Open. 2017 Aug 11;7(8):e017099. doi: 10.1136/bmjopen-2017-017099.

Comparative effectiveness of six **Chinese herb formulas** for acute exacerbation of chronic obstructive pulmonary disease: protocol for systematic review and network meta-analysis.

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INTRODUCTION: Chinese medicine is commonly used to combine with pharmacotherapy for the treatment of acute exacerbation of chronic obstructive pulmonary disease (AECOPD). Six Chinese herb formulas involving Weijing decoction, Maxingshigan decoction, Yuebijiabanxia decoction, Qingqihuatan decoction, Dingchuan decoction and Sangbaipi decoction are recommended in Chinese medicine clinical guideline or textbook, to relieve patients with phlegm-heat according to Chinese syndrome differentiation. However, the comparative effectiveness among these six formulas has not been investigated in published randomised controlled trials. We plan to summarise the direct and indirect evidence for these six formulas combined with pharmacotherapy to determine the relative merits options for the management of AECOPD.
METHODS AND ANALYSIS: We will perform the comprehensive search for the randomised controlled trials to evaluate the effectiveness of six Chinese herb formulas recommended in Chinese medicine clinical guideline or textbook. The combination of pharmacotherapy includes bronchodilators, antibiotics and corticosteroids that are routinely prescribed for AECOPD. The primary outcome will be lung function, arterial blood gases and length of hospital stay. The data screening and

extraction will be conducted by two different reviewers. The quality of RCT will be assessed according to the Cochrane handbook risk of bias tool. The Bayes of network meta-analysis (NMA) will be conducted with WinBUGS to compare the effectiveness of six formulas. We will also use the surface under the cumulative ranking curve (SUCRA) to obtain the comprehensive rank for these treatments.
ETHICS AND DISSEMINATION: This review does not require ethics approval and the results of NMA will be submitted to a peer-review journal.
TRIAL REGISTRATION NUMBER: PROSPERO (CRD42016052699).

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42. Int J Chron Obstruct Pulmon Dis. 2017 Aug 4;12:2333-2342. doi: 10.2147/COPD.S117461. eCollection 2017.

An evaluation of activity tolerance, patient-reported outcomes and satisfaction with the effectiveness of pulmonary daoyin on patients with chronic obstructive pulmonary disease.

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BACKGROUND AND OBJECTIVE: Pulmonary Daoyin (PD) (evolved from ancient Chinese daoyin skills), is a rehabilitation technology that combines specially designed movements of the arms and body and controlled breathing exercises, to improve the physiological and psychological status of patients with chronic respiratory disease. Pulmonary rehabilitation is effective for patients with chronic obstructive pulmonary disease (COPD), and the efficacy of PD is unknown. The aim of this study is to investigate the effect of a PD program in enhancing activity

tolerance, patient-reported outcomes and satisfaction with the effectiveness on patients with COPD.
MATERIALS AND METHODS: The multi-center, randomized controlled trial was conducted from November 2011 to June 2012 in local communities in cities of the 11 research centers in China. It included COPD patients (moderate to very severe) who were recruited from an outpatient clinic. A randomized controlled study included 464 COPD patients who were randomly allocated either to the PD group, participating in a 3-month, ten times-weekly supervised PD-based pulmonary rehabilitation program, or to a control group continuing with regular medical treatment alone. Data were gathered using the 6-minute walking distance (6MWD) test, COPD patient-reported outcomes (COPD-PRO) and Effectiveness Satisfaction Questionnaire for COPD (ESQ-COPD), which was filled out at baseline and 3 months post-intervention. SAS 9.2 was used for statistical analysis.
RESULTS: Of the 464 patients in the study, 461 were included in the full analysis set (FAS); 429 were in the per-protocol analysis set (PPS). After 3-month intervention, there was a significant difference between the two groups in 6MWD (FAS; P=0.049; PPS; P=0.041), total score and all domains of COPD-PRO (FAS; P=0.014; PPS; P=0.003) and ESQ-COPD (FAS; P=0.038; PPS; P<0.001).
CONCLUSIONS: The PD program was able to improve the activity tolerance level and satisfaction of COPD patients because of its effectiveness.

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Effect of respiratory rehabilitation techniques on the autonomic function in patients with chronic obstructive pulmonary disease: A systematic review.

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Patients with chronic obstructive pulmonary disease (COPD) show several extrapulmonary abnormalities such as impairment in the autonomic function (AF). Similarly, the use of respiratory training techniques such as controlled breathing techniques, noninvasive mechanical ventilation (NIMV), and oxygen supplementation for AF modulation in patients with COPD is popular in existing literature. However, the evidence to support their use is nonexistent. A systematic search of studies reporting on the effect of controlled breathing techniques, NIMV, and/or oxygen supplementation techniques on AF outcome

parameters was conducted in three online databases: PubMed, Embase, and Web of Science. Following the Preferred Reporting Items for Systematic reviews and Meta-Analyses statement, relevant studies were retained and qualitatively analyzed for evidence synthesis. The methodological quality in these studies was evaluated using the evidence based guideline development (EBRO) checklists per designs provided by the Dutch Cochrane Centre. Eighteen studies met the inclusion criteria of the review and were included and discussed. The evidence synthesis revealed that a strong and moderate level evidence supported oxygen supplementation and slow breathing techniques, respectively, in significantly enhancing the baroreceptor sensitivity (BRS) values in patients with COPD. The effect of the examined techniques on the heart rate variability and muscle sympathetic nerve activity was of a limited or inconsistent evidence. The findings from this review suggest that oxygen supplementation and controlled breathing techniques have profound positive influence on the BRS in patients with COPD. However, it is not fully clear whether these influence translates to any therapeutic benefit on the general AF of patients with COPD in the long term.

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44. Eur J Phys Rehabil Med. 2017 Jun;53(3):447-461. doi: 10.23736/S1973-9087.16.04374-4. Epub 2016 Nov 10.

Effects of **yogic exercises** on functional capacity, lung function and quality of life in participants with obstructive pulmonary disease: a randomized controlled study.

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BACKGROUND: Knowledge of hatha yogic exercises, the most used yoga style, for increasing functional capacity in patients with obstructive pulmonary diseases remains limited.
AIM: The aim was to evaluate the effects and feasibility of hatha yoga (HY) compared to a conventional training program (CTP) on functional capacity, lung function and quality of life in patients with obstructive pulmonary diseases.
DESIGN: Randomized clinical trial.
SETTING: The study was performed at the Karolinska University Hospital,

Stockholm, among outpatients.
POPULATION: Thirty-six patients with obstructive pulmonary disease.
METHODS: Forty patients were randomized with 36 (24 women, median age =64, age range: 40-84 years) participating in HY (N.=19) or CTP (N.=17). Both HY and CTP involved a 12-week program with a 6-month follow-up. Functional capacity (using the 6-Minute Walk Test), lung function (spirometry), respiratory muscle strength (respiratory pressure meter), oxygen saturation (SpO2), breathlessness (Borg), respiratory rate (f) and disease-specific quality of life (CRQ) were measured at baseline, at 12 weeks and at a 6-month follow-up.
RESULTS: Testing for interactions (group x time) with ANOVAs showed significant effects on the CRQ fatigue (P=0.04) and emotional (P=0.02) domains, with improvements in the CTP group after the 12-week intervention (P=0.02 and 0.01, respectively) but not in the HY group. No between group effects emerged, however, within each group, significant improvements emerged for the six-minute walk distance (6MWD) after 12-week intervention (HY: mean difference 32.6 m; CI: 10.1-55.1, P=0.014; CTP: mean difference 42.4 m; CI: 17.9-67.0, P=0.006).
SECONDARY OUTCOMES: within-group improvements in CRQ appeared in both groups. Within the HY group, f decreased and SpO2 increased. Improved effects after follow-up emerged only for the CTP group for diastolic blood pressure (P=0.05) and CRQ emotional and fatigue domain (P=0.01).
CONCLUSIONS: There were no between-group differences. After 12 weeks, 6MWD improved significantly within both groups. Within the HY group, improvements in the CRQ mastery domain, f and SpO2 emerged. Within the CTP group, there were improvements in lung function parameter forced vital capacity, respiratory muscle strength and all CRQ-domains. The CTP also exhibited effects on CRQ after the 6months follow-up.
CLINICAL REHABILITATION IMPACT: Limited effects of HY and CTP emerged. HY seems feasible and safe as a form of physical exercise for pulmonary disease patients. As part of the rehabilitation, HY may constitute an alternative to other physical training activities and may be a useful addition to formal rehabilitation programs.

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45. Int J Chron Obstruct Pulmon Dis. 2017 May 12;12:1415-1425. doi: 10.2147/COPD.S131062. eCollection 2017.

Effects of a simple prototype respiratory muscle trainer on respiratory muscle strength, quality of life and dyspnea, and oxidative stress in COPD patients: a preliminary study.

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BACKGROUND: The aim of this study was to evaluate the efficiency of a simple prototype device for training respiratory muscles in lung function, respiratory muscle strength, walking capacity, quality of life (QOL), dyspnea, and oxidative stress in patients with COPD.
METHODS: Thirty COPD patients with moderate severity of the disease were randomized into three groups: control (n=10, 6 males and 4 females), standard training (n=10, 4 males and 6 females), and prototype device (n=10, 5 males and 5 females). Respiratory muscle strength (maximal inspiratory pressure [PImax] and maximal expiratory pressure [PEmax]), lung function (forced vital capacity [FVC], percentage of FVC, forced expiratory volume in 1 second [FEV1], percentage of FEV1 [FEV1%], and FEV1/FVC), 6-minute walking distance (6MWD), QOL, and oxidative stress markers (total antioxidant capacity [TAC]), glutathione (GSH), malondialdehyde (MDA), and nitric oxide (NO) were evaluated before and after 6 weeks of training. Moreover, dyspnea scores were assessed before; during week 2, 4, and 6 of training; and at rest after training.
RESULTS: All parameters between the groups had no statistical difference before training, and no statistical change in the control group after week 6. FVC, FEV1/FVC, PImax, PEmax, QOL, MDA, and NO showed significant changes after 6 weeks of training with either the standard or prototype device, compared to pre-training. FEV1, FEV1%, 6MWD, TAC, and GSH data did not change statistically. Furthermore, the results of significant changes in all parameters were not statistically different between training groups using the standard and prototype device. The peak dyspnea scores increased significantly in week 4 and 6 when applying the standard or prototype device, and then lowered significantly at rest after 6 weeks of training, compared to pre-training.
CONCLUSION: This study proposes that a simple prototype device can be used clinically in COPD patients as a standard device to train respiratory muscles, improving lung function and QOL, as well as involving MDA and NO levels.

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46. Curr Med Res Opin. 2017 May;33(5):919-925. doi: 10.1080/03007995.2017.1295030. Epub 2017 Mar 12.

Efficacy and safety of **HL301** in the treatment of acute bronchitis and acute exacerbation of chronic bronchitis: a phase 2, randomized, double-blind, placebo-controlled, multicenter study.

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PURPOSE: The efficacy and safety of Chinese herbs for symptomatic treatment of bronchitis is not well established. We evaluated the efficacy and safety of a combination product of seven herbs (HL301) for the treatment of acute bronchitis (AB) and acute exacerbation of chronic bronchitis (AECB) using a randomized, double-blind, placebo-controlled, multicenter trial design.
METHODS: A total of 160 patients with AB or with AECB were randomized to receive placebo or one of three doses of HL301 (0.6 g/day, 1.2 g/day, or 1.8 g/day) for a total of 7 days. The primary study endpoint was the change in bronchitis severity score (BSS) from the baseline visit (visit 2) to the end of treatment visit (visit 3). Other efficacy variables were percentage BSS systemic sign efficacy after treatment and change in individual BSS parameters after treatment.
FINDINGS: Changes in BSS from visit 2 to visit 3 in the three treatment groups (4.63 ± 2.24, 4.08 ± 1.63, and 4.15 ± 1.74 in the HL301 0.6 g/day, 1.2 g/day, and 1.8 g/day groups, respectively) were higher than that of the placebo group (2.88 ± 2.57) in the per protocol set (PPS) ($P < .05$), and it was also valid in the full analysis set (FAS). The number of participants whose symptoms (measured by BSS) improved at least 30% after treatment was higher in all three treatment groups compared to the placebo group in both the FAS and the PPS ($P < .05$, for all).
IMPLICATIONS: Three different doses of HL301 (0.6 g/day, 1.2 g/day, and 1.8 g/day) were effective in decreasing the BSS index compared to placebo. HL301 may be effective for symptomatic treatment of both AB and AECB.
LIMITATIONS: Essential components of HL301 have not been delineated in the study and patients with AB and AECB were indiscriminately enrolled in the present study. Respective evaluation of the efficacy of HL301 for AB and AECB will be necessary in the future.

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47. Pak J Pharm Sci. 2017 May;30(3(Special)):1121-1124.

The study of long term curative effect of chronic obstructive pulmonary disease in remission stage treated with **TCM**.

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In this study of long term curative effect of chronic obstructive pulmonary disease in remission stage treated with TCM, we have selected 79 patients from January 2013 to January 2015 in our hospital with chronic obstructive pulmonary disease as the research object, we have divided into observation group (40 cases) and control group (39 cases) randomly, the control group received routine treatment, observation group received TCM pulmonary rehabilitation therapy, compare pulmonary function and clinical curative effect of 2 groups of patients, and dyspnea index (Brog index), blood oxygen saturation after 6 and 12 months' treatment. The lung function of the observation group was better than that of control group, the difference was significant (P<0.05). The effective rate of observation group was 97.50%, which was better than that of control group (84.62%), the difference was significant (P<0.05). Brog score, blood oxygen saturation of 2 groups of patients before treatment was not statistically significant (P>0.05); observation group's Brog scores after 6 and12 months' treatment were (2.96 + 0.87), (1.61 + 0.49), oxygen saturation were 94%, 99%, the control group's Brog scores were (4.65 + 0.54), (2.97 + 0.91), oxygen saturation were 86%, 93%, the observation group's indicators were better than that of control group after treatment, the difference was significant (P<0.05). TCM lung rehabilitation treatment of chronic obstructive pulmonary disease has obvious curative effect, it can improve the function of lung, reduce the occurrence of dyspnea, improve patients' tolerance and have obvious long-term curative effect.

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48. Int J Chron Obstruct Pulmon Dis. 2017 Feb 21;12:691-696. doi: 10.2147/COPD.S127742. eCollection 2017.

The immediate effect of soft tissue manual therapy intervention on lung function in severe chronic obstructive pulmonary disease.

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BACKGROUND AND OBJECTIVE: In chronic obstructive pulmonary disease (COPD), accessory respiratory muscles are recruited as a compensatory adaptation to changes in respiratory mechanics. This results in shortening and overactivation of these and other muscles. Manual therapy is increasingly being investigated as a way to alleviate these changes. The aim of this study was to measure the immediate effect on lung function of a soft tissue manual therapy protocol (STMTP) designed to address changes in the accessory respiratory muscles and their associated structures in patients with severe COPD.
METHODS: Twelve medically stable patients (n=12) with an existing diagnosis of severe COPD (ten: GOLD Stage III and two: GOLD Stage IV) were included. Residual volume, inspiratory capacity and oxygen saturation (SpO2) were recorded immediately before and after administration of the STMTP. A Student's t-test was used to determine the effect of the manual therapy intervention ($P<0.05$).
RESULTS: The mean age of the patients was 62.4 years (range 46-77). Nine were male. Residual volume decreased from 4.5 to 3.9 L ($P=0.002$), inspiratory capacity increased from 2.0 to 2.1 L ($P=0.039$) and SpO2 increased from 93% to 96% ($P=0.001$).
CONCLUSION: A single application of an STMTP appears to have the potential to produce immediate clinically meaningful improvements in lung function in patients with severe and very severe COPD.

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49. Trials. 2017 Feb 6;18(1):59. doi: 10.1186/s13063-017-1802-1.

A psychological intervention to promote acceptance and adherence to non-invasive ventilation in people with chronic obstructive pulmonary disease: study protocol of a randomised controlled trial.

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BACKGROUND: People with chronic obstructive pulmonary disease (COPD) sometimes experience anxiety, depression and comorbid cognitive deficits. Rather than being merely a consequence of symptom-related physical impairments these additional problems may be part of the clinical course of the condition. The relationship between the physical and psychological aspects of the condition is illustrated by the patterns of use of non-invasive ventilation (NIV); NIV is often rejected or used inappropriately, resulting in clinical deterioration and an increase in health care costs. The study aims to analyse the effects of psychological support on the acceptance of, and adherence to, NIV. The primary outcome will be a latent variable related to indices of use of NIV equipment and adherence to treatment regime; while survival rates and psychological variables will constitute the secondary outcomes.
METHODS: A two-arm randomised controlled trial will be conducted. We aim to recruit 150 COPD patients for whom NIV is indicated. The experimental group will receive a brief course of psychological support that will include counselling, relaxation and mindfulness-based exercises. In some cases, it will also include neuropsychological rehabilitation exercises. Support will be delivered via four to eight meetings at the HD Respiratory Rehabilitation Unit, at home or via telemedicine. Controls will receive standard care and watch educational videos related to the management of their disease.
DISCUSSION: This investigation will gain insight about the role of a psychological intervention as part of a treatment plan during the process of adaptation to NIV in COPD patients.
TRIAL REGISTRATION: ClinicalTrials.gov, ID: NCT02499653 . Registered on 14 July 2015.

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50. Complement Ther Med. 2016 Dec;29:109-115. doi: 10.1016/j.ctim.2016.09.009. Epub 2016 Sep 13.

Effect of sequential treatment with **TCM** syndrome differentiation on acute exacerbation of chronic obstructive pulmonary disease and AECOPD risk window.

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OBJECTIVE: To evaluate the efficacy and safety of the comprehensive interventions based on three Traditional Chinese medicine (TCM) patterns therapy in acute exacerbations of chronic obstructive pulmonary disease (AECOPD) and AECOPD risk window.
METHODS: A prospective, multi-center, single-blinded, double-dummy and randomized controlled clinical trial is being conducted to test the therapeutic effects of a sequential two stage treatment. A total of 364 patients were enrolled into this study with 182 in each treatment group (TCM and conventional). Patients received medication (or control) according to their assigned group. TCM treatment according to syndrome differentiation for AECOPD were administered twice daily to patients with AECOPD over 7-21days, followed by TCM for AECOPD risk window (RW) over 28days. All patients were followed up for 6 months. Exacerbations were used as the primary outcome measures. Forced expiratory volume in the first second (FEV1) and the modified medical research council dyspnea (MMRC) scale, quality of life and mortality rate were used as secondary outcome measures.
RESULTS: Of 364 randomized patients, 353 were included in the intention-to-treat analysis and 290 in the per-protocol analysis. In the TCM group, 16 patients (10.4%) reached the primary end point; 24 (17.7%) in the conventional group (RR 0.59, 95% CI 0.33-1.06; p=0.074). Among patients with a re-exacerbation, the median time to event was 107.5days (interquartile range [IQR], 39.5-129.0) in the TCM and 50days (IQR, 31-130.5) in the conventional group (P=0.011). After exacerbation therapy and a further 180-days follow-up, patients in the TCM group had significant improvements in dyspnea, as measured by MMRC (P=0.003), Patients in the TCM group also had improvements in health-related quality of life (P=0.002), as measured COPD Assessment Test (CAT). There was no difference between groups in death, and recovery of lung function. There were no differences between the TCM and conventional treatment group in adverse events.
CONCLUSIONS: In patients presenting to the respiratory department with acute exacerbations of COPD, TCM treatments with syndrome differentiation will have beneficial effects with regard to re-exacerbation, relieving symptoms, improving quality of life for COPD patients.

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51. Int J Chron Obstruct Pulmon Dis. 2016 Oct 28;11:2691-2700. eCollection 2016.

Effects of aerobic training combined with respiratory muscle stretching on the functional exercise capacity and thoracoabdominal kinematics in patients with COPD: a randomized and controlled trial.

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BACKGROUND: Patients with COPD present a major recruitment of the inspiratory muscles, predisposing to chest incoordination, increasing the degree of dyspnea and impairing their exercise capacity. Stretching techniques could decrease the respiratory muscle activity and improve their contractile capacity; however, the systemic effects of stretching remain unknown.
OBJECTIVE: The aim of this study was to evaluate the effects of aerobic training combined with respiratory muscle stretching on functional exercise capacity and thoracoabdominal kinematics in patients with COPD.
DESIGN: This study was a randomized and controlled trial.
PARTICIPANTS: A total of 30 patients were allocated to a treatment group (TG) or a control group (CG; n=15, each group).
INTERVENTION: The TG was engaged in respiratory muscle stretching and the CG in upper and lower limb muscle stretching. Both groups performed 24 sessions (twice a week, 12 weeks) of aerobic training.
EVALUATIONS: Functional exercise capacity (6-minute walk test), thoracoabdominal kinematics (optoelectronic plethysmography), and respiratory muscle activity (surface electromyography) were evaluated during exercise. Analysis of covariance was used to compare the groups at a significance level of 5%.
RESULTS: After the intervention, the TG showed improved abdominal (ABD) contribution, compartmental volume, mobility, and functional exercise capacity with decreased dyspnea when compared with the CG ($P<0.01$). The TG also showed a decreased respiratory muscle effort required to obtain the same pulmonary volume compared to the CG ($P<0.001$).
CONCLUSION: Our results suggest that aerobic training combined with respiratory muscle stretching increases the functional exercise capacity with decreased dyspnea in patients with COPD. These effects are associated with an increased efficacy of the respiratory muscles and participation of the ABD compartment.

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52. J Altern Complement Med. 2016 Oct;22(10):810-817. Epub 2016 Aug 3.

Qigong Yi Jinjing Promotes Pulmonary Function, Physical Activity, Quality of Life and Emotion Regulation Self-Efficacy in Patients with Chronic Obstructive Pulmonary Disease: A Pilot Study.

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PURPOSE: The purpose of this pilot study was to examine the effect of a Chinese traditional exercise program, Qigong Yi Jinjing (QYJJ), on patients with chronic obstructive pulmonary disease (COPD).
METHODS: One hundred and thirty eligible COPD patients were randomly divided into three groups: the QYJJ group (n = 42), the self-management exercise group (n = 43), and the control group (n = 45). Data were collected and analyzed at baseline and again at one, three, and six months. A pulmonary rehabilitation index, consisting of pulmonary function, six-minute walk test, Regulatory Emotion Self-Efficacy questionnaire, and exercise of the COPD Assessment Test widely used to evaluate health-related quality of life (HRQL) in participants with COPD, was measured.
RESULTS: Compared with the other groups, participants in QYJJ group had significantly better lung function (forced expiratory volume in one second: $F = 8.96$, $p = 0.000$; forced expiratory volume in one second/forced vital capacity: $F = 11.55$, $p = 0.000$; the percentage of forced expiratory volume in one second in prediction: $F = 24.27$, $p = 0.000$); walked a longer distance ($F = 152.52$, $p = 0.000$), and had more satisfactory HRQL ($F = 14.08$, $p = 0.000$). QYJJ training also contributed to improving the ability of emotion regulation ($F = 36.56$, $p = 0.000$). There were significant positive changes in expressing positive affect ($F = 56.25$, $p = 0.000$) and managing despondency/distress ($F = 21.58$, $p = 0.000$), apart from the ability to regulate anger/irritation ($F = 1.20$, $p = 0.305$). The longer QYJJ is practiced, the more effective the influence is on the pulmonary rehabilitation-related index measures.
CONCLUSIONS: These results indicate that QYJJ exercise produced positive effects on pulmonary function, physical activity, emotion regulation self-efficiency (modulating the expression of despondency or distress and experiencing and expressing positive affect), and HRQL in patients with COPD.

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53. Medicine (Baltimore). 2016 Oct;95(40):e4879.

Acupuncture for chronic obstructive pulmonary disease (COPD): A multicenter, randomized, sham-controlled trial.

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BACKGROUND: Acupuncture has been suggested to treat chronic obstructive pulmonary disease (COPD) in China. However, current evidence is insufficient to draw a firm conclusion regarding the effectiveness of acupuncture in COPD. Therefore, this multicenter, randomized, sham-controlled study was designed to evaluate the efficacy of acupuncture for treating patients with COPD.
METHODS: This is a two-arm, parallel group, multicenter, randomized, sham-controlled trial with concealed allocation, and participants, assessor, and analyst blinding. Seventy-two participants with COPD were recruited and randomly divided into 2 groups (real acupuncture group and sham acupuncture group) in a 1:1 ratio. Patients received either real or sham needling at the same acupoints 3 times weekly for 8 weeks. The primary outcome was dyspnea on exertion evaluated using the 6-minute walk test. In addition, health-related quality of life was also evaluated. Measurements were obtained at baseline and after 8 weeks of treatment.
RESULTS: Six-minute walking distance measurements and health-related quality of life were significantly better in the real acupuncture group than that in the sham acupuncture group.
CONCLUSION: The findings suggest that acupuncture can be used as an adjunctive therapy to reduce dyspnea in patients with COPD.

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54. PLoS One. 2016 Sep 2;11(9):e0161564. doi: 10.1371/journal.pone.0161564. eCollection 2016.

The Effects of **Traditional Chinese Exercise** in Patients with Chronic Obstructive Pulmonary Disease: A Meta-Analysis.

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a major public health problem worldwide. However, several studies that have assessed the role of traditional Chinese exercise in the management of this disease include broad variations in sample sizes and results. Therefore, this meta-analysis was conducted to assess the effects of traditional Chinese exercise on patients with COPD.
METHODS: Two investigators independently identified and extracted data from selected articles. A computerized search of electronic databases through August 2015 was conducted. Mean differences (MDs) and 95% confidence intervals (CIs) were calculated to analyze the combined data. The methodological quality was evaluated using the Cochrane risk-of-bias tool. Heterogeneity was assessed with the I2 test.
RESULTS: Ten randomized, controlled trials (RCTs) involving 622 patients met the inclusion criteria. There were significant improvements in the 6-minute walking distance test (6 MWD;MWD = 12.10 m; 95% CI, 7.56-16.65 m; p<0.001); forced expiratory volume in one second (FEV1% predicted; WMD = 9.02; 95% CI, 6.80-11.23; p<0.00001); forced expiratory volume in 1 second/forced vital capacity (FEV(1)/FVC) ratio (Tiffenau Index; WMD = 6.67; 95% CI, 5.09-8.24; p<0.00001); and quality of life, as evaluated by the Chronic Respiratory Disease Questionnaire (CRDQ; WMD = 0.85 score; 95% CI, 0.52-1.18; p<0.00001).
CONCLUSIONS: Traditional Chinese exercise could provide an effective alternative method for managing COPD. Larger and higher-quality trials are required.

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55. BMJ Open. 2016 Aug 4;6(8):e011297. doi: 10.1136/bmjopen-2016-011297.

Study design for a randomised controlled trial to explore the modality and mechanism of **Tai Chi** in the pulmonary rehabilitation of chronic obstructive pulmonary disease.

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INTRODUCTION: Although pulmonary rehabilitation (PR) is associated with significant clinical benefits in chronic obstructive pulmonary disease (COPD) and has been recommended by guidelines, PR with conventional exercise training has not been widely applied in the clinic because of its inherent limitations. Alternative exercise such as Tai Chi has been investigated and the results are promising. However, the strengths and weaknesses of the exercise modality of Tai Chi, conventional PR and a combination of Tai Chi and conventional PR and the possible mechanisms underlying Tai Chi exercise remain unclear. This study aims to address the above research gaps in a well-designed clinical trial.
METHODS AND ANALYSIS: This study is a single-blind, randomised controlled trial. Participants with stable COPD will be recruited and randomly assigned to one of four groups receiving Tai Chi exercise, conventional PR using a total body recumbent stepper (TBRS), combined Tai Chi and TBRS, or usual care (control) in a 1:1:1:1 ratio. Participants will perform 30 min of supervised exercise three times a week for 8 weeks; they will receive sequential follow-ups until 12 months after recruitment. The primary outcome will be health-related quality of life as measured by the St George's Respiratory Questionnaire. Secondary outcomes will include 6 min walking distance, pulmonary function, the modified Medical Research Council Dyspnoea Scale, the COPD Assessment Test, the Hospital Anxiety and Depression Scale, the Berg Balance Scale, exacerbation frequency during the study period, and systemic inflammatory and immune markers.
ETHICS AND DISSEMINATION: Ethics approval has been granted by the Clinical Trial and Biomedical Ethics Committee of West China Hospital of Sichuan University (No TCM-2015-82). Written informed consent will be obtained from each participant before any procedures are performed. The study findings will be published in peer-reviewed journals and presented at national and international conferences.
TRIAL REGISTRATION NUMBER: ChiCTR-IOR-15006874; Pre-results.

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56. Clin Rehabil. 2016 Aug;30(8):750-64. doi: 10.1177/0269215515604903. Epub 2015 Sep 22.

Tai Chi for improving cardiopulmonary function and quality of life in patients with chronic obstructive pulmonary disease: a systematic review and meta-analysis.

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OBJECTIVE: To examine the effect of Tai Chi on cardiopulmonary function and quality of life in chronic obstructive pulmonary disease.
DATA SOURCES: Cochrane Library, PUBMED, EMBASE, China Biology Medicine disc, China National Knowledge Infrastructure, and Wanfang database.
METHODS: Articles on randomized controlled trials comparing Tai Chi with other treatments or no treatment were identified. A random-effects model was used to calculate the pooled mean difference (MD) with 95% confidence interval (CI).
RESULTS: Fifteen articles involving 1354 participants were included. Compared with the control group, Tai Chi was more effective in improving exercise capacity on 6-minute walking distance (short term: MD = 16.02, 95% CI 2.86 to 29.17; mid term: MD = 30.90, 95% CI 6.88 to 54.93; long term: MD = 24.63, 95% CI 2.30 to 46.95), as well as pulmonary functions on forced expiratory volume in the first second (mid term: MD = 0.10; 95% CI 0.01 to 0.19), and forced vital capacity (mid term: MD = 0.20; 95% CI 0.04 to 0.36). Concerning quality of life, we found Tai Chi was better than the control group for the Chronic Respiratory Disease Questionnaire dyspnoea score (short term: MD = 0.90; 95% CI 0.51 to 1.29), fatigue score (short term: MD = 0.75; 95% CI 0.42 to 1.09), and total score (short term: MD = 1.92; 95% CI 0.54 to 3.31).
CONCLUSIONS: Tai Chi may improve exercise capacity in the short, mid, and long terms. However, no significant long term differences in pulmonary function and quality of life were observed for patients with chronic obstructive pulmonary disease.

DOI: 10.1177/0269215515604903
PMID: 26396162 [Indexed for MEDLINE]

57. Syst Rev. 2016 Jul 27;5(1):126. doi: 10.1186/s13643-016-0300-y.

An evidence map of the effect of **Tai Chi** on health outcomes.

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BACKGROUND: This evidence map describes the volume and focus of Tai Chi research reporting health outcomes. Originally developed as a martial art, Tai Chi is typically taught as a series of slow, low-impact movements that integrate the breath, mind, and physical activity to achieve greater awareness and a sense of well-being.
METHODS: The evidence map is based on a systematic review of systematic reviews. We searched 11 electronic databases from inception to February 2014, screened reviews of reviews, and consulted with topic experts. We used a bubble plot to graphically display clinical topics, literature size, number of reviews, and a broad estimate of effectiveness.
RESULTS: The map is based on 107 systematic reviews. Two thirds of the reviews were published in the last five years. The topics with the largest number of published randomized controlled trials (RCTs) were general health benefits (51 RCTs), psychological well-being (37 RCTs), interventions for older adults (31 RCTs), balance (27 RCTs), hypertension (18 RCTs), fall prevention (15 RCTs), and cognitive performance (11 RCTs). The map identified a number of areas with evidence of a potentially positive treatment effect on patient outcomes, including Tai Chi for hypertension, fall prevention outside of institutions, cognitive performance, osteoarthritis, depression, **chronic obstructive pulmonary disease**, pain, balance confidence, and muscle strength. However, identified reviews cautioned that firm conclusions cannot be drawn due to methodological limitations in the original studies and/or an insufficient number of existing research studies.
CONCLUSIONS: Tai Chi has been applied in diverse clinical areas, and for a number of these, systematic reviews have indicated promising results. The evidence map provides a visual overview of Tai Chi research volume and content.
SYSTEMATIC REVIEW REGISTRATION: PROSPERO CRD42014009907.

DOI: 10.1186/s13643-016-0300-y
PMCID: PMC4962385
PMID: 27460789 [Indexed for MEDLINE]

58. Cochrane Database Syst Rev. 2016 Jun 7;(6):CD009953. doi: 10.1002/14651858.CD009953.pub2.

Tai Chi for chronic obstructive pulmonary disease (COPD).

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BACKGROUND: Tai Chi, a systematic callisthenic exercise first developed in ancient China, involves a series of slow and rhythmic circular motions. It emphasises use of 'mind' or concentration to control breathing and circular body motions to facilitate flow of internal energy (i.e. 'qi') within the body. Normal flow of 'qi' is believed to be essential to sustain body homeostasis, ultimately leading to longevity. The effect of Tai Chi on balance and muscle strength in the

elderly population has been reported; however, the effect of Tai Chi on dyspnoea, exercise capacity, pulmonary function and psychosocial status among people with chronic obstructive pulmonary disease (COPD) remains unclear.
OBJECTIVES: • To explore the effectiveness of Tai Chi in reducing dyspnoea and improving exercise capacity in people with COPD.• To determine the influence of Tai Chi on physiological and psychosocial functions among people with COPD.
SEARCH METHODS: We searched the Cochrane Airways Group Specialised Register of trials (which included the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Allied and Complementary Medicine Database (AMED) and PsycINFO); handsearched respiratory journals and meeting abstracts; and searched Chinese medical databases including Wanfang Data, Chinese Medical Current Contents (CMCC), Chinese Biomedical Database (CBM), China Journal Net (CJN) and China Medical Academic Conference (CMAC), from inception to September 2015. We checked the reference lists of all primary studies and review articles for relevant additional references.
SELECTION CRITERIA: We included randomised controlled trials (RCTs) comparing Tai Chi (Tai Chi alone or Tai Chi in addition to another intervention) versus control (usual care or another intervention identical to that used in the Tai Chi group) in people with COPD. Two independent review authors screened and selected studies.
DATA COLLECTION AND ANALYSIS: Two independent review authors extracted data from included studies and assessed risk of bias on the basis of suggested criteria listed in the Cochrane Handbook for Systematic Reviews of Interventions. We extracted post-programme data and entered them into RevMan software (version 5.3) for data synthesis and analysis.
MAIN RESULTS: We included a total of 984 participants from 12 studies (23 references) in this analysis. We included only those involved in Tai Chi and the control group (i.e. 811 participants) in the final analysis. Study sample size ranged from 10 to 206, and mean age ranged from 61 to 74 years. Programmes lasted for six weeks to one year. All included studies were RCTs; three studies used allocation concealment, six reported blinded outcome assessors and three studies adopted an intention-to-treat approach to statistical analysis. No adverse events were reported. Quality of evidence of the outcomes ranged from very low to moderate.Analysis was split into three comparisons: (1) Tai Chi versus usual care; (2) Tai Chi and breathing exercise versus breathing exercise alone; and (3) Tai Chi and exercise versus exercise alone.Comparison of Tai Chi versus usual care revealed that Tai Chi demonstrated a longer six-minute walk distance (mean difference (MD) 29.64 metres, 95% confidence interval (CI) 10.52 to 48.77 metres; participants = 318; I(2) = 59%) and better pulmonary function (i.e. forced expiratory volume in one second, MD 0.11 L, 95% CI 0.02 to 0.20 L; participants = 258; I(2) = 0%) in post-programme data. However, the effects of Tai Chi in reducing dyspnoea level and improving quality of life remain inconclusive. Data are currently insufficient for evaluating the impact of Tai Chi on maximal exercise capacity, balance and muscle strength in people with COPD. Comparison of Tai Chi and other interventions (i.e. breathing exercise or exercise) versus other interventions shows no superiority and no additional effects on symptom improvement nor on physical and psychosocial outcomes with Tai Chi.
AUTHORS' CONCLUSIONS: No adverse events were reported, implying that Tai Chi is safe to practise in people with COPD. Evidence of very low to moderate quality suggests better functional capacity and pulmonary function in post-programme data

for Tai Chi versus usual care. When Tai Chi in addition to other interventions was compared with other interventions alone, Tai Chi did not show superiority and showed no additional effects on symptoms nor on physical and psychosocial function improvement in people with COPD. With the diverse style and number of forms being adopted in different studies, the most beneficial protocol of Tai Chi style and number of forms could not be commented upon. Hence, future studies are warranted to address these topics.

DOI: 10.1002/14651858.CD009953.pub2
PMID: 27272131 [Indexed for MEDLINE]

59. Explore (NY). 2016 May-Jun;12(3):171-9. doi: 10.1016/j.explore.2016.02.004. Epub 2016 Mar 2.

The Experience of **Learning Meditation and Mind/Body Practices** in the COPD Population.

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CONTEXT: Persons with Chronic Obstructive Pulmonary Disease (COPD) exhibit high levels of comorbid anxiety that severely worsens their sensation of dyspnea and is associated with high levels of avoidance of essential activities resulting in an increase morbidity and mortality. Increasing meditation and mind/body practices have been shown to decrease anxiety, and improve intrapersonal and interpersonal relationships in general populations, however, results of studies in the COPD population have been mixed.
OBJECTIVE: Understanding how persons with COPD experience learning meditation and mind/body skills would aid future meditation-focused mind/body intervention design.
DESIGN/SETTING/PATIENTS: A mixed-method study of a community based meditation-focused mind/body intervention for persons with COPD.
MEASURES: Reflective journaling, phone exit interviews and survey measures: chronic disease respiratory questionnaire, and Anxiety Sensitivity 3 questionnaire.
INTERVENTION: Eight weekly one hour meditation-focused mind/body classes that taught concentration and insight meditation skills along with mind/body exercises that facilitated increased body and emotional awareness.
RESULTS: Out of 41 participants, 32 (73%) contributed detailed experience about learning and practicing meditation and mind/body practices that distilled into four themes, barriers to practice, learning style, emotional processing, and benefits of practice. Of those 32 participants 21 (73%) identified improvement in physical or emotional symptoms. Overall, 13 (40%) participants provided details regarding how they adapted specific meditation skills into daily life to improve emotional function and lessen dyspnea. Anxiety sensitivity to social situations

was associated with a lack of participation. Lessons learned for larger scale application to future meditation and mind/body intervention design for chronic illness populations such as COPD are identified.

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PMID: 27067676 [Indexed for MEDLINE]

60. Br J Sports Med. 2016 Apr;50(7):397-407. doi: 10.1136/bjsports-2014-094388. Epub 2015 Sep 17.

The effect of **Tai Chi** on four chronic conditions-cancer, osteoarthritis, heart failure and chronic obstructive pulmonary disease: a systematic review and meta-analyses.

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BACKGROUND: Many middle-aged and older persons have more than one chronic condition. Thus, it is important to synthesise the effectiveness of interventions across several comorbidities. The aim of this systematic review was to summarise current evidence regarding the effectiveness of Tai Chi in individuals with four common chronic conditions-cancer, osteoarthritis (OA), heart failure (HF) and chronic obstructive pulmonary disease (COPD).
METHODS: 4 databases (MEDLINE, EMBASE, CINAHL and SPORTDiscus) were searched for original articles. Two reviewers independently screened the titles and abstracts and then conducted full-text reviews, quality assessment and finally data abstraction. 33 studies met the inclusion criteria. Meta-analyses were performed on disease-specific symptoms, physiological outcomes and physical performance of each chronic condition. Subgroup analyses on disease-specific symptoms were conducted by categorising studies into subsets based on the type of comparison groups.
RESULTS: Meta-analyses showed that Tai Chi improved or showed a tendency to improve physical performance outcomes, including 6-min walking distance (6MWD) and knee extensor strength, in most or all four chronic conditions. Tai Chi also improved disease-specific symptoms of pain and stiffness in OA.
CONCLUSIONS: The results demonstrated a favourable effect or tendency of Tai Chi to improve physical performance and showed that this type of exercise could be performed by individuals with different chronic conditions, including COPD, HF and OA.

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DOI: 10.1136/bjsports-2014-094388
PMID: 26383108 [Indexed for MEDLINE]

61. Chin J Integr Med. 2016 Apr;22(4):284-92. doi: 10.1007/s11655-016-2497-y. Epub 2016 Apr 9.

Association between skin reactions and efficacy of summer **acupoint application** treatment on chronic pulmonary disease: A prospective study.

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OBJECTIVE: To examine the variations in the prevalence of skin reactions and the association between skin reactions and efficacy of summer acupoint application treatment (SAAT) on chronic pulmonary disease (CPD).
METHODS: A total of 2,038 patients with CPD were enrolled at 3 independent hospitals (defined as Groups A, B and C, respectively) in China. All patients were treated by SAAT, as applying a herbal paste onto the acupoints of Fengmen (BL 12) and Feishu (BL 13) on the dog days of summer, according to the lunar calendar, in 2008. Ten days after treatment, skin reaction data (no reaction, itching, stinging, blistering, and infection) were obtained via face-to-face interviews. Patients were retreated in the same hospital one year later, thereby allowing doctors to assess treatment efficacy based on the patients' symptoms, the severity of the spirometric abnormalities, and the concomitant medications used.
RESULTS: A large number of patients (85.3%) displayed reactive symptoms; however, the marked associations between reactive symptoms and age or gender were not observed. An increased number of patients from Group B (99.3%) and Group C (76.5%) displayed reactive symptoms due to the increased mass of crude Semen Sinapis Albae. The effective rate of SAAT was as high as 90.4% for patients of Group B, which was followed by Group A (70.9%) and Group C (42.2%). Using stratified analyses, a convincing association between reactive symptoms and therapeutic efficacy was observed for patients with asthma [itching: odds ratio (OR)=2.17, 95% confidence interval (CI): 1.49 to 3.14; blistering: OR=0.43, 95% CI: 0.25 to 0.73; and no reaction: OR=0.56, 95% CI: 0.35 to 0.90]. However, the same tendency was not observed for patients with chronic bronchitis and chronic

obstructive pulmonary disease.
CONCLUSIONS: SAAT can induce very mild skin reactions for patients with CPD, among which patients with asthma displayed a strong association between skin reactions and therapeutic efficacy. The skin reactions may be induced by the crude Semen Sinapis Albae.

DOI: 10.1007/s11655-016-2497-y
PMID: 27059486 [Indexed for MEDLINE]

62. Eur J Phys Rehabil Med. 2016 Apr;52(2):169-75. Epub 2014 Sep 5.

Effects of a muscular training program on chronic obstructive pulmonary disease patients with moderate or severe exacerbation antecedents.

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BACKGROUND: Muscular training is the corner stone of pulmonary rehabilitation programs.
AIM: To evaluate the effects of a muscular training program - carried out on chronic obstructive pulmonary disease (COPD) subjects with antecedents of moderate or severe exacerbation - on exercise tolerance, Health Related Quality of Life (HRQoL) and illness prognosis.
DESIGN: A quasi-experimental study.
SETTING: University Hospital.
POPULATION: Twenty-five subjects with COPD (Global Initiative for Chronic Obstructive Lung Disease (GOLD) degrees II, III and IV); with moderate or severe exacerbations and functional deterioration due to respiratory disability; with commitment and capacity to participate in the program. Subjects were selected by consecutive sampling.
METHODS: Subjects underwent 20 muscular training sessions consisting of 30 minutes of inspiratory muscle training, 15 minutes of warm-up protocol of upper limb exercises, 30 minutes of muscle training in ergometric cycle, 5 minutes of stretching protocol of lower limbs plus illness awareness. The main outcome measures were six minute walking test (6MWT), specific HRQoL questionnaires (St. Georges Respiratory Questionnaire (SGRQ), Chronic Respiratory Disease Questionnaire (CRDQ) and Airways Questionnaire 20 (AQ20)) and the BODE Index.
RESULTS: All subjects improved significantly (P<0.001) their HRQoL in the SGRQ, the CRDQ and the AQ20, and this was demonstrated in each one of the evaluated dimensions. A positive response in relation to exercise tolerance and illness prognosis was observed. Following the program subjects walked an average of 56 meters more (P<0.001) and the BODE index was a mean of 1.5 less regarding the initial value (P<0.001).
CONCLUSIONS: A 20-session muscular training program contributes to an improvement in HRQoL, exercise tolerance and illness prognosis in COPD subjects with moderate or severe exacerbations.

CLINICAL REHABILITATION IMPACT: The intervention program could be easily implemented since it needs a minimum of human and technological resources.

PMID: 25192182 [Indexed for MEDLINE]

63. Eur Respir J. 2016 Apr;47(4):1261-4. doi: 10.1183/13993003.01574-2015. Epub 2016 Feb 25.

Inspiratory muscle training improves breathing pattern during exercise in COPD patients.

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DOI: 10.1183/13993003.01574-2015
PMID: 26917617 [Indexed for MEDLINE]

64. Patient Educ Couns. 2016 Mar;99(3):348-355. doi: 10.1016/j.pec.2015.10.013. Epub 2015 Oct 23.

Mindfulness in people with a respiratory diagnosis: A systematic review.

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OBJECTIVES: To describe how mindfulness is delivered and to examine the effect of mindfulness on health-related quality of life (HRQOL), mindful awareness and stress in adults with a respiratory diagnosis.
METHOD: Five electronic databases were searched. Data were extracted and assessed for quality by two reviewers.
RESULTS: Data were extracted from four studies. Interventions were based on Mindfulness-Based Stress Reduction and delivered by trained instructors. Recordings of mindfulness were provided for home-based practice. One study targeted the intervention exclusively to anxious individuals with a respiratory diagnosis. Adherence to mindfulness was poor. No effects were seen on disease-specific HRQOL (standardized mean difference (SMD)=-0.21 95% CI: -0.36 to 0.48, p=0.78), mindful awareness (SMD=0.09 95% CI: -0.34 to 0.52, p=0.68) or stress levels (SMD =-0.11 95% CI: -0.46 to 0.23, p=0.51).
CONCLUSION: Mindfulness interventions, delivered to individuals with a respiratory diagnosis, varied widely in terms of delivery and the outcomes assessed making it difficult to draw any conclusions regarding its effectiveness.

DOI: 10.1016/j.pec.2015.10.013
PMID: 26561308 [Indexed for MEDLINE]

65. COPD. 2016;13(1):19-25. doi: 10.3109/15412555.2015.1043428. Epub 2015 Sep 29.

Results of a Multimodal Program During Hospitalization in Obese COPD Exacerbated Patients.

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The objective of this study was to analyze the results of a multimodal therapeutic program during hospitalization in obese AECOPD patients. This was a randomized, single-blind clinical trial conducted at two university hospitals in Granada, Spain. Forty-nine patients hospitalized due to AECOPD were randomly allocated to a control group (CG), in which patients received standard care, or to an intervention group (IG), in which patients were included in a multimodal therapeutic program, added to the standard care. The main outcome measures were pulmonary, physical (strength and exercise capacity) and perceived (dyspnea, quality of life and psychological distress) variables. Within-group significant improvements ($p < 0.05$) were found in physical and perceived variables in the IG

after the treatment. In the CG, a significant decrease was found in lower limb strength and a significant improvement in dyspnea and in three subscales of the EuroQol-5D questionnaire. The between-groups analysis showed significant differences after the treatment on lower limb strength and exercise capacity values ($p < 0.05$), in three of the EuroQol-5D subscales, and in the total score and the depression subscale of the Hospital Anxiety and Depression Scale. A multimodal therapeutic program has a beneficial effect on physical functioning and perceived variables in hospitalized obese patients with AECOPD.

DOI: 10.3109/15412555.2015.1043428
PMID: 26418629 [Indexed for MEDLINE]

66. J Diet Suppl. 2016;13(1):93-105. doi: 10.3109/19390211.2014.952865. Epub 2014 Aug 29.

Effects of **Curcuminoids-Piperine Combination** on Systemic Oxidative Stress, Clinical Symptoms and Quality of Life in Subjects with Chronic Pulmonary Complications Due to Sulfur Mustard: A Randomized Controlled Trial.

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Oxidative stress plays a key role in the development of chronic pulmonary complications of sulfur mustard (SM). Curcuminoids are polyphenols with documented safety and antioxidant activity. The present study aimed to investigate the efficacy of short-term supplementation with curcuminoids (co-administered with piperine to enhance the bioavailability of curcuminoids) in alleviating systemic oxidative stress and clinical symptoms, and improvement of health-related quality of life (HRQoL) in subjects suffering from chronic pulmonary complications due to SM exposure who are receiving standard respiratory treatments. Eighty-nine subjects were recruited to this randomized double-blind placebo-controlled trial, being randomly allocated to either curcuminoids (1500 mg/day) + piperine (15 mg/day) combination (n = 45) or placebo (n = 44) for a period of 4 weeks. High-resolution computed tomography suggested the diagnosis of bronchiolitis obliterans in all subjects. Efficacy measures were changes in serum levels of reduced glutathione (GSH) and malonedialdehyde (MDA). The severity and frequency of respiratory symptoms and HRQoL were also assessed using St. George respiratory Questionnaire (SGRQ) and COPD Assessment Test (CAT) indices. Serum levels of GSH were increased whilst those of MDA decreased by the end of trial in both groups. Likewise, there were significant improvements in the total as well as subscale (symptoms, activity and impact) SGRQ and CAT scores in both groups. However, comparison of magnitude of changes revealed a greater effect of curcuminoids-piperine combination compared to placebo in elevating GSH, reducing MDA and improving CAT and SGRQ (total and subscale) scores ($p < 0.001$). Regarding the promising effects of curcuminoids on the measures of systemic oxidative

stress, clinical symptoms and HRQoL, these phytochemicals may be used as safe adjuvants in patients suffering from chronic SM-induced pulmonary complications who are receiving standard treatments.

DOI: 10.3109/19390211.2014.952865
PMID: 25171552 [Indexed for MEDLINE]

67. Respir Care. 2016 Jan;61(1):50-60. doi: 10.4187/respcare.03947. Epub 2015 Nov 10.

Effects of Inspiratory Muscle Training and **Calisthenics-and-Breathing Exercises** in COPD With and Without Respiratory Muscle Weakness.

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BACKGROUND: Patients with COPD may experience respiratory muscle weakness. Two therapeutic approaches to the respiratory muscles are inspiratory muscle training and calisthenics-and-breathing exercises. The aims of the study are to compare the effects of inspiratory muscle training and calisthenics-and-breathing exercises associated with physical training in subjects with COPD as an additional benefit of strength and endurance of the inspiratory muscles, thoracoabdominal mobility, physical exercise capacity, and reduction in dyspnea on exertion. In addition, these gains were compared between subjects with and without respiratory muscle weakness.
METHODS: 25 subjects completed the study: 13 composed the inspiratory muscle training group, and 12 composed the calisthenics-and-breathing exercises group. Subjects were assessed before and after training by spirometry, measurements of respiratory muscle strength and test of inspiratory muscle endurance, thoracoabdominal excursion measurements, and the 6-min walk test. Moreover, scores for the Modified Medical Research Council dyspnea scale were reported.
RESULTS: After intervention, there was a significant improvement in both groups of respiratory muscle strength and endurance, thoracoabdominal mobility, and walking distance in the 6-min walk test. Additionally, there was a decrease of dyspnea in the 6-min walk test peak. A difference was found between groups, with higher values of respiratory muscle strength and thoracoabdominal mobility and lower values of dyspnea in the 6-min walk test peak and the Modified Medical Research Council dyspnea scale in the inspiratory muscle training group. In the

inspiratory muscle training group, subjects with respiratory muscle weakness had greater gains in inspiratory muscle strength and endurance.
CONCLUSIONS: Both interventions increased exercise capacity and decreased dyspnea during physical effort. However, inspiratory muscle training was more effective in increasing inspiratory muscle strength and endurance, which could result in a decreased sensation of dyspnea. In addition, subjects with respiratory muscle weakness that performed inspiratory muscle training had higher gains in inspiratory muscle strength and endurance but not of dyspnea and submaximal exercise capacity. (ClinicalTrials.gov registration NCT01510041.).

DOI: 10.4187/respcare.03947
PMID: 26556894 [Indexed for MEDLINE]

68. Respir Med. 2015 Dec;109(12):1532-9. doi: 10.1016/j.rmed.2015.10.001. Epub 2015 Oct 19.

AIR: Advances in Respiration - **Music therapy** in the treatment of chronic pulmonary disease.

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The aim of this randomized control study is to examine the effect of a multimodal psycho-music therapy intervention on respiratory symptoms, psychological well-being and quality of life of patients with Chronic Obstructive Pulmonary Disease and other lung diseases as adjunct to Pulmonary Rehabilitation with a design of music therapy plus PR compared to Pulmonary Rehabilitation alone. Music therapy group treatment including music visualization, wind playing and singing was provided weekly. This was compared with standard care treatment. Adults ages 48 to 88 (mean 70.1) with moderate to severe GOLD stage II-IV lung disease as well as other diseases processes that lead to chronic airflow limitations were included (n = 98). Participants in both conditions were followed from baseline enrollment to six weeks post control/treatment. Outcome measures included the Beck Depression Inventory Scale 2nd edition-Fast Screen (BDI-FS), Chronic Respiratory Questionnaire Self-Reported (CRQ-SR), and Dyspnea Visual Analog Scale (VAS). Results showed improvement in symptoms of depression (LS mean -0.2) in the music therapy group with statistical divergence between groups ($p = 0.007$). The CRQ-SR demonstrated improvement in dyspnea ($p = 0.01$ LS mean 0.5) and mastery ($p = 0.06$ LS mean 0.5) in the music therapy group and fatigue ($p = 0.01$ LS mean 0.3). VAS demonstrated highly significant effect in the music therapy group between weeks 5 and 6 ($p < 0.001$). The findings of this study suggest that music

therapy combined with standard PR may prove to be an effective modality in the management of pulmonary disease.

DOI: 10.1016/j.rmed.2015.10.001
PMID: 26522499 [Indexed for MEDLINE]

69. Chron Respir Dis. 2015 Nov;12(4):305-12. doi: 10.1177/1479972315594625. Epub 2015 Jul 13.

Inspiratory muscle training during pulmonary rehabilitation in chronic obstructive pulmonary disease: A randomized trial.

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Although recommended by international guidelines, the benefit of inspiratory muscle training (IMT) in addition to rehabilitation remains uncertain. The objective was to demonstrate the effectiveness of IMT on dyspnea using Borg scale and multidimensional dyspnea profile questionnaire at the end of a 6-minute walk test (6MWT) in patients with chronic obstructive pulmonary disease (COPD) with preserved average maximum inspiratory pressure (PImax) of 85 cm H2O (95% of predicted (pred.) value) and admitted for a rehabilitation program in a dedicated center. In a randomized trial, comparing IMT versus no IMT in 32 COPD patients without inspiratory muscle weakness (PImax >60 cm H2O) who were admitted for pulmonary rehabilitation (PR) for 3 weeks, we evaluated the effect of IMT on dyspnea, using both Borg scale and multidimensional dyspnea profile (MDP) at the end of the 6MWT, and on functional parameters included inspiratory muscle function (PImax) and 6MWT. All testings were performed at the start and the end of PR. In unadjusted analysis, IMT was not found to be associated with an improvement of either dyspnea or PImax. After adjustment on confounders (initial Borg score) and variables of interaction (forced expiratory volume in 1 second (FEV1)), we found a trend toward an improvement of "dyspnea sensory intensity", items from MDP and a significant improvement on the variation in the 2 items of MDP ("tight or constricted" and "breathing a lot"). In the subgroup of patients with FEV1 < 50% pred., 5 items of MDP were significantly improved, whereas no benefit was observed in patients with FEV1 > 50% pred. IMT did not significantly

improve dyspnea or functional parameter in COPD patients with PImax > 60 cm H2O. However, in the subgroup of patients with FEV1 < 50% pred., MDP was significantly improved.

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70. Contemp Clin Trials. 2015 Nov;45(Pt B):458-467. doi: 10.1016/j.cct.2015.09.004. Epub 2015 Sep 8.

Long-term Exercise After Pulmonary Rehabilitation (LEAP): Design and rationale of a randomized controlled trial of **Tai Chi**.

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BACKGROUND: Persons with chronic obstructive pulmonary disease (COPD) have reduced exercise capacity and levels of physical activity. Supervised, facility-based pulmonary rehabilitation programs improve exercise capacity and reduce dyspnea, but novel long-term strategies are needed to maintain the benefits gained. Mind-body modalities such as Tai Chi which combine aerobic activity, coordination of breathing, and cognitive techniques that alleviate the physical inactivity, dyspnea, and anxiety and depression that are the hallmarks of COPD are promising strategies.
METHODS/DESIGN: We have designed a randomized controlled study to examine whether Tai Chi will maintain exercise capacity in persons with COPD who have recently

completed a supervised pulmonary rehabilitation program, compared to standard care. The primary outcome is 6-min walk test distance at 6 months. Secondary outcomes include health-related quality of life, dyspnea, mood, occurrence of acute exacerbations, engagement in physical activity, exercise self-efficacy, and exercise adherence. Simultaneously, we are conducting a pilot study of group walking. We will enroll 90 persons who will be randomized to one of three arms in a 2:2:1 ratio: Tai Chi, standard care, or group-based walking.
DISCUSSION: The Long-term Exercise After Pulmonary Rehabilitation (LEAP) study is a novel and clinically relevant trial. We will enroll a well-characterized cohort of persons with COPD and will comprehensively assess physiological and psychosocial outcomes. Results of this study will provide the evidence base for persons with COPD to engage in Tai Chi as a low-cost, long-term modality to sustain physical activity in persons who have completed a standard short-term pulmonary rehabilitation program.
TRIAL REGISTRATION: This trial is registered in Clinical Trials.gov, with the ID number of NCT01998724.

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71. J Altern Complement Med. 2015 Oct;21(10):610-6. doi: 10.1089/acm.2014.0284. Epub 2015 Jul 28.

Effects of **Transcutaneous Electrical Acupoint Stimulation** on Patients with Stable Chronic Obstructive Pulmonary Disease: A Prospective, Single-Blind, Randomized, Placebo-Controlled Study.

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OBJECTIVES: To evaluate the clinical effect of transcutaneous electrical nerve stimulation over acupoints (acu-TENS) on patients with stable chronic obstructive pulmonary disease (COPD).
DESIGN: Prospective, single-blind, randomized, placebo-controlled study.
Settings/Locations: Outpatient center of West China Hospital, Sichuan University.
PATIENTS: Fifty patients with stable COPD enrolled in the study.
INTERVENTIONS: Patients were randomly assigned to one of two groups: the acu-TENS group (n=25), who underwent acu-TENS over acupoints of bilateral EX-B-1(Dingchuan), BL-13 (Feishu), BL-23 (Shenshu), ST-36 (Zusanli), and the placebo acu-TENS control group (n=25), who had the same electrode placement but no electrical output. Treatments were performed for 40-minute sessions every 2 days for 4 weeks.

OUTCOME MEASURES: Lung function (forced expiratory volume in 1 second, percentage predicted (FEV(1)% predicted); forced vital capacity, percentage predicted (FVC% predicted), 6-minute walk distance (6MWD) and oxygen saturation (SpO(2)), COPD assessment test (CAT), and Dyspnea Visual Analogue Scale (DVAS) were assessed before and after the intervention.
RESULTS: Compared to control group, FEV(1)% predicted was improved and CAT score was decreased significantly in the acu-TENS group after treatment ($p<0.05$). The DVAS score decreased significantly in the acu-TENS group ($p=0.039$), with a slight but insignificant improve in 6MWD, SpO(2), and FVC% predicted after treatment.
CONCLUSIONS: Acu-TENS over acupoints of bilateral EX-B-1 (Dingchuan), BL-13 (Feishu), BL-23 (Shenshu), and ST-36 (Zusanli) improved FEV(1)% predicted and reduced DVAS and CAT scores on patients with stable COPD. This may be a novel treatment strategy in COPD.

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72. J Physiother. 2015 Oct;61(4):182-9. doi: 10.1016/j.jphys.2015.08.009. Epub 2015 Sep 19.

The Manual Diaphragm Release Technique improves diaphragmatic mobility, inspiratory capacity and exercise capacity in people with chronic obstructive pulmonary disease: a randomised trial.

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QUESTIONS: In people with chronic obstructive pulmonary disease, does the Manual Diaphragm Release Technique improve diaphragmatic mobility after a single treatment, or cumulatively? Does the technique also improve exercise capacity, maximal respiratory pressures, and kinematics of the chest wall and abdomen?
DESIGN: Randomised, controlled trial with concealed allocation, intention-to-treat analysis, and blinding of participants and assessors.
PARTICIPANTS: Twenty adults aged over 60 years with clinically stable chronic obstructive pulmonary disease.
INTERVENTION: The experimental group received six treatments with the Manual Diaphragm Release Technique on non-consecutive days within a 2-week period. The control group received sham treatments following the same regimen.
OUTCOME MEASURES: The primary outcome was diaphragmatic mobility, which was analysed using ultrasonography. The secondary outcomes were: the 6-minute walk test; maximal respiratory pressures; and abdominal and chest wall kinematics measured by optoelectronic plethysmography. Outcomes were measured before and after the first and sixth treatments.
RESULTS: The Manual Diaphragm Release Technique significantly improved

diaphragmatic mobility over the course of treatments, with a between-group difference in cumulative improvement of 18mm (95% CI 8 to 28). The technique also significantly improved the 6-minute walk distance over the treatment course, with a between-group difference in improvement of 22 m (95% CI 11 to 32). Maximal expiratory pressure and sniff nasal inspiratory pressure both showed significant acute benefits from the technique during the first and sixth treatments, but no cumulative benefit. Inspiratory capacity estimated by optoelectronic plethysmography showed significant cumulative benefit of 330ml (95% CI 100 to 560). The effects on other outcomes were non-significant or small.
CONCLUSION: The Manual Diaphragm Release Technique improves diaphragmatic mobility, exercise capacity and inspiratory capacity in people with chronic obstructive pulmonary disease. This technique could be considered in the management of people with chronic obstructive pulmonary disease.
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PMID: 26386894 [Indexed for MEDLINE]

73. Respir Physiol Neurobiol. 2015 Sep 15;216:35-42. doi: 10.1016/j.resp.2015.05.013. Epub 2015 Jun 3.

Cognitive behaviour therapy reduces dyspnoea ratings in patients with chronic obstructive pulmonary disease (COPD).

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There is evidence that psychological factors contribute to the perception of increased difficulty of breathing in patients with chronic obstructive pulmonary disease (COPD), and increase morbidity. We tested the hypothesis that cognitive behaviour therapy (CBT) decreases ratings of perceived dyspnoea in response to

resistive loading in patients with COPD. From 31 patients with COPD, 18 were randomised to four sessions of specifically targeted CBT and 13 to routine care. Prior to randomisation, participants were tested with an inspiratory external resistive load protocol (loads between 5 and 45cmH2O/L/s). Six months later, we re-measured perceived dyspnoea in response to the same inspiratory resistive loads and compared results to measurements prior to randomisation. There was a significant 17% reduction in dyspnoea ratings across the loads for the CBT group, and no reduction for the routine care group. The decrease in ratings of dyspnoea suggests that CBT to alleviate breathing discomfort may have a role in the routine treatment of people with COPD.

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PMID: 26049126 [Indexed for MEDLINE]

74. Phys Ther. 2015 Sep;95(9):1264-73. doi: 10.2522/ptj.20140245. Epub 2015 Apr 9.

Efficacy of a Novel Method for Inspiratory Muscle Training in People With Chronic Obstructive Pulmonary Disease.

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BACKGROUND: Most inspiratory muscle training (IMT) interventions in patients with chronic obstructive pulmonary disease (COPD) have been implemented as fully supervised daily training for 30 minutes with controlled training loads using mechanical threshold loading (MTL) devices. Recently, an electronic tapered flow resistive loading (TFRL) device was introduced that has a different loading profile and stores training data during IMT sessions.
OBJECTIVE: The aim of this study was to compare the efficacy of a brief, largely unsupervised IMT protocol conducted using either traditional MTL or TFRL on inspiratory muscle function in patients with COPD.
DESIGN: Twenty patients with inspiratory muscle weakness who were clinically stable and participating in a pulmonary rehabilitation program were randomly allocated to perform 8 weeks of either MTL IMT or TFRL IMT.
METHODS: Participants performed 2 daily home-based IMT sessions of 30 breaths

(3-5 minutes per session) at the highest tolerable intensity, supported by twice-weekly supervised sessions. Adherence, progression of training intensity, increases in maximal inspiratory mouth pressure (Pimax), and endurance capacity of inspiratory muscles (Tlim) were evaluated.
RESULTS: More than 90% of IMT sessions were completed in both groups. The TFRL group tolerated higher loads during the final 3 weeks of the IMT program, with similar effort scores on the 10-Item Borg Category Ratio (CR-10) Scale, and achieved larger improvements in Pimax and Tlim than the MTL group.
LIMITATIONS: A limitation of the study was the absence of a study arm involving a sham IMT intervention.
CONCLUSIONS: The short and largely home-based IMT protocol significantly improved inspiratory muscle function in both groups and is an alternative to traditional IMT protocols in this population. Participants in the TFRL group tolerated higher training loads and achieved larger improvements in inspiratory muscle function than those in the MTL group.

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PMID: 25858974 [Indexed for MEDLINE]

75. Int J Chron Obstruct Pulmon Dis. 2015 Aug 27;10:1703-9. doi: 10.2147/COPD.S90673. eCollection 2015.

Efficacy of a respiratory rehabilitation exercise training package in hospitalized elderly patients with acute exacerbation of COPD: a randomized control trial.

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CLINICAL TRIALS IDENTIFIER: NCT02329873.
BACKGROUND: Acute exacerbation (AE) of COPD is characterized by a sudden worsening of COPD symptoms. Previous studies have explored the effectiveness of respiratory rehabilitation for patients with COPD; however, no training program specific to acute exacerbation in elderly patients or unstable periods during hospitalization has been developed.
OBJECTIVE: To evaluate the effects of a respiratory rehabilitation exercise training package on dyspnea, cough, exercise tolerance, and sputum expectoration among hospitalized elderly patients with AECOPD.

METHODS: A randomized control trial was conducted. Pretest and posttest evaluations of 61 elderly inpatients with AECOPD (experimental group n=30; control group n=31) were performed. The experimental group received respiratory rehabilitation exercise training twice a day, 10-30 minutes per session for 4 days. The clinical parameters (dyspnea, cough, exercise tolerance, and sputum expectoration) were assessed at the baseline and at the end of the fourth day.
RESULTS: All participants (median age =70 years, male =60.70%, and peak expiratory flow 140 L) completed the study. In the patients of the experimental group, dyspnea and cough decreased and exercise tolerance and sputum expectoration increased significantly compared with those of the patients in the control group (all $P<0.05$). Within-group comparisons revealed that the dyspnea, cough, and exercise tolerance significantly improved in the experimental group by the end of the fourth day (all $P<0.05$).
CONCLUSION: Results of this study suggest that the respiratory rehabilitation exercise training package reduced symptoms and enhanced the effectiveness of the care of elderly inpatients with AECOPD.

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PMID: 26345529 [Indexed for MEDLINE]

76. Chest. 2015 Aug;148(2):417-429. doi: 10.1378/chest.14-2168.

Distractive Auditory Stimuli in the Form of **Music** in Individuals With COPD: A Systematic Review.

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BACKGROUND: Music has been used as a distractive auditory stimulus (DAS) in patients with COPD, but its effects are unclear. This systematic review aimed to establish the effect of DAS on exercise capacity, symptoms, and health-related quality of life (HRQOL) under three conditions: (1) during exercise training, (2) during exercise testing, and (3) for symptom management at rest.
METHODS: Randomized controlled or crossover trials as well as cohort studies of DAS during exercise training, during formal exercise testing, and for symptom management among individuals with COPD were identified from a search of seven databases. Two reviewers independently assessed study quality. Weighted mean differences (WMDs) with 95% CIs were calculated using a random-effects model.

RESULTS: Thirteen studies (12 of which were randomized controlled or crossover trials) in 415 participants were included. DAS increased exercise capacity when applied over at least 2 months of exercise training (WMD, 98 m; 95% CI, 47-150 m). HRQOL improved only after a training duration of 3 months. Less dyspnea was noted with DAS during exercise training, but this was not consistently observed in short-term exercise testing or as a symptom management strategy at rest. CONCLUSIONS: DAS appears to reduce symptoms of dyspnea and fatigue when used during exercise training, with benefits observed in exercise capacity and HRQOL. When applied during exercise testing, the effects on exercise capacity and symptoms and as a strategy for symptom management at rest are inconsistent.

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77. Complement Ther Med. 2015 Aug;23(4):603-11. doi: 10.1016/j.ctim.2015.06.015. Epub 2015 Jun 27.

Effectiveness and safety of **traditional Chinese medicine** on stable chronic obstructive pulmonary disease: A systematic review and meta-analysis.

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OBJECTIVE: This study was intended to evaluate the efficacy and safety of Traditional Chinese Medicine (TCM) on stable chronic obstructive pulmonary disease (COPD).
METHOD: A systematic review was conducted of clinical trials that compared TCM plus conventional medicine treatment versus conventional medicine treatment alone. Randomized controlled trials (RCTs) of clinical therapeutic studies on COPD by TCM were included. Searches were applied to the following electronic databases: The PubMed、 the Cochrane Library、CNKI、CBM and VIP. No blinding and language restriction was used. All trials included were analyzed according to the criteria of the Cochrane Handbook. Review Manager 5.2 software was used for data analysis.
RESULT: 37 randomized clinical trials enrolling 3212 patients were included. Follow-up duration ranged from 4 weeks to 1.5 years. Compared to conventional

medicine treatment alone, TCM plus conventional medicine treatment showed improvement in forced expiratory volume in one second (FEV1) (MD 0.12 L; 95% CI 0.08 to 0.16), and less exacerbation (OR -0.86; 95% CI -1.13 to -0.60). TCM treatment also led to a statistically improvement in SGRQ score compared to placebo (MD -4.36; 95% CI -7.12 to -1.59). There was statistically significant difference in six-minute walk distance (MD 36.66 meters, 95% CI 24.57 to 48.74) found with TCM compared to placebo.
CONCLUSION: Among patients with stable COPD, TCM plus conventional medical treatment therapy might be associated with reduction risk of exacerbation, improvement of lung function, better quality of life and higher exercise capacity. The results were limited by the methodological flaws of the studies. High quality studies are needed to provide clear evidence for the future use of TCM.

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78. BMJ Open. 2015 Jul 7;5(7):e008031. doi: 10.1136/bmjopen-2015-008031.

Efficacy of a minimal home-based psychoeducative intervention versus usual care for managing anxiety and dyspnoea in patients with severe chronic obstructive pulmonary disease: a randomised controlled trial protocol.

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INTRODUCTION: In its final stages, chronic obstructive pulmonary disease is a severely disabling condition that is characterised by dyspnoea, which causes substantial anxiety. Anxiety is associated with an impaired quality of life and increased hospital admissions. Untreated comorbid anxiety can have devastating consequences for both patients and their relatives. Non-pharmacological interventions, including cognitive-behavioural therapy, have been effective in managing anxiety and dyspnoea in patients with chronic obstructive pulmonary disease. However, the majority of existing interventions have tested the efficacy of relatively intensive comprehensive programmes and primarily targeted patients

who have moderate pulmonary disease. We present the rationale and design for a trial that focused on addressing the challenges experienced by severe pulmonary disease populations. The trial investigates the efficacy of a minimal home-based psychoeducative intervention versus usual care for patients with severe chronic obstructive pulmonary disease.
METHODS AND ANALYSIS: The trial is a randomised controlled trial with a 4-week and 3-month follow-up. 66 patients with severe chronic obstructive pulmonary disease and associated anxiety will be randomised 1:1 to either an intervention or control group. The intervention consists of a single psychoeducative session in the patient's home in combination with a telephone booster session. The intervention is based on a manual, with a theoretical foundation in cognitive-behavioural therapy and psychoeducation. The primary outcome is patient-reported anxiety as assessed by the Hospital and Anxiety and Depression Scale (HADS).
ETHICS AND DISSEMINATION: This trial complies with the latest Declaration of Helsinki, and The Ethics Committee of the Capital Region of Denmark (number H-1-2013-092) was queried for ethical approval. Trial results will be disseminated in peer-reviewed publications and presented at scientific conferences.
TRIAL REGISTRATION NUMBER: NCT02366390.

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79. J Am Geriatr Soc. 2015 Jul;63(7):1420-5. doi: 10.1111/jgs.13478. Epub 2015 Jul 1.

Efficacy of **Liuzijue Qigong** in Individuals with Chronic Obstructive Pulmonary Disease in Remission.

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OBJECTIVES: To investigate the effectiveness of a 6-month Liuzijue qigong (LQG) program in promoting physical and psychosocial function in individuals with chronic obstructive pulmonary disease (COPD).
DESIGN: Single-blind, randomized controlled trial.
SETTING: Seven hospital respiratory care centers in Beijing.
PARTICIPANTS: Individuals with COPD (N = 126; mean age 71.1 ± 2.7, range 65-85).
METHODS: Participants were randomly assigned to one of two groups: LQG (n = 63) and control (n = 63). Subjects in the LQG group received a LQG program consisting of four 45-minute sessions each week and daily walking for 30 minutes for 6

months. Control subjects walked daily for 30 minutes. Data collection was performed at baseline, at 6 weeks, and at 6 months. Primary outcomes involved functional capacity, and secondary outcomes involved quality of life.
RESULTS: The LQG group had greater improvements in the 6-minute walk test (P = .02); specific airway conductance (P = .02); monitored functional task evaluation (P = .04); Medical Outcomes Study 36-item Short-Form Health Survey (SF-36; general health (P < .001), mental health (P = .03)); Chronic Respiratory Questionnaire (dyspnea (P = .05), emotion (P = .05), and mastery (P = .04) at 6-month follow-up. After 6 months, the control group had significant improvement only on the SF-36 mental health (P = .02).
CONCLUSION: LQG promoted functional capacity and quality of life in older adults with COPD at 6 months and is a good alternative home exercise program for older adults in the rehabilitation of COPD.

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80. Med Care. 2015 Jul;53(7):653-61. doi: 10.1097/MLR.0000000000000372.

Yoga in the Management of Chronic Disease: A Systematic Review and Meta-analysis.

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BACKGROUND: Heart disease, stroke, and chronic obstructive pulmonary disease (COPD) are the leading causes of death and disability worldwide. Although individuals with these conditions have been reported to benefit from yoga, its effectiveness remains unclear.
OBJECTIVE: To perform a systematic review of the effectiveness of yoga on exercise capacity, health related quality of life (HRQL), and psychological well-being for individuals with chronic disease and describe the structure and delivery of programs.
RESEARCH DESIGN: We performed a systematic review of randomized controlled trials examining yoga programs for individuals with heart disease, stroke, and COPD compared with usual care. Quality was assessed using the Cochrane risk of bias tool. Meta-analyses were conducted using Review Manager 5.3. The protocol was registered on PROSPERO (CRD42014014589).
RESULTS: Ten studies (431 individuals, mean age 56±8 y) were included and were comparable in their design and components, irrespective of the chronic disease. The standardized mean difference for the mean change in exercise capacity was 2.69 (95% confidence interval, 1.39-3.99) and for HRQL it was 1.24 (95% confidence interval, -0.37 to 2.85). Symptoms of anxiety were reduced after yoga

in individuals with stroke, although this was not observed in individuals with COPD. The effect of yoga on symptoms of depression varied across studies with no significant effects compared with usual care.
CONCLUSIONS: Yoga programs have similar designs and components across chronic disease populations. Compared with usual care, yoga resulted in significant improvements in exercise capacity and a mean improvement in HRQL. Yoga programs may be a useful adjunct to formal rehabilitation programs.

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81. Rehabil Nurs. 2015 Jul-Aug;40(4):243-8. doi: 10.1002/rnj.136. Epub 2014 Jan 8.

Comparing Inspiratory Resistive Muscle Training with Incentive Spirometry on Rehabilitation of COPD Patients.

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PURPOSE: To examine the effect of incentive spirometry in pulmonary rehabilitation of chronic obstructive pulmonary disease (COPD) patients and compare its efficacy with inspiratory resistive muscle training (IMT) technique.
DESIGN: Randomized controlled trial.
METHODS: Thirty patients with COPD, from a general hospital in Mashhad, Iran, were randomly assigned to two study groups. All subjects trained daily in two 15-minute sessions, 4 days a week, for 4 weeks. Respiratory function tests were compared before interventions and at the end of weeks 2 and 4.
FINDINGS: Both techniques improved the mean values of all respiratory function tests ($p \leq .01$). The IMT technique was more effective to improve MVV and PImax ($p \leq .05$). PEFR was better improved in the incentive spirometry group ($p \leq .05$). There was no significant difference for other spirometric parameters between two groups.
CONCLUSIONS: Incentive spirometry can be considered as an effective component for pulmonary rehabilitation in COPD patients.

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82. Respir Care. 2015 May;60(5):689-94. doi: 10.4187/respcare.03533. Epub 2015 Jan 13.

Distractive Auditory Stimuli Alleviate the Perception of Dyspnea Induced by Low-Intensity Exercise in Elderly Subjects With COPD.

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BACKGROUND: Although recent studies have shown that distractive auditory stimuli (DAS) in the form of music increase adherence to exercise in subjects with COPD, the effect of DAS on dyspnea induced by low-intensity, constant-load exercise in elderly patients with COPD has not been elucidated. Therefore, the purpose of this study was to investigate the effect of DAS on the perception of dyspnea induced by low-intensity, constant-load exercise in elderly subjects with COPD.
METHODS: We enrolled 16 male out-patients with COPD. Subjects completed cycling exercises with and without DAS at 40% maximum oxygen consumption. They were asked to rate their perception of dyspnea using the modified Borg scale every 3 min during exercise and every 1 min during the recovery period.
RESULTS: Dyspnea perception during low-intensity exercise showed a significant correlation between the exercise condition (DAS and control) and exercise duration (P = .04). Exercise-induced dyspnea perception under the DAS condition was significantly lower than that under the control condition from 18 min after the start of exercise to 3 min after the end of exercise (18, 20, 21, 22, and 23 min, P = .01, P < .001, P = .009, P = .006, and P = .006, respectively). However, oxygen consumption and ventilation in response to low-intensity exercise did not significantly differ in the DAS and control conditions (P = .39 and .14, respectively)
CONCLUSIONS: Our results suggest that DAS is a non-pharmacologic therapy that can be used to reduce the dyspneic sensation in elderly patients with COPD.

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83. NPJ Prim Care Respir Med. 2015 Apr 16;25:15020. doi: 10.1038/npjpcrm.2015.20.

HELPing older people with very severe chronic obstructive pulmonary disease (HELP-COPD): mixed-method feasibility pilot randomised controlled trial of a novel intervention.

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BACKGROUND: Extending palliative care to those with advanced non-malignant disease is advocated, but the implications in specific conditions are poorly understood.
AIMS: We piloted a novel nurse-led intervention, HELPing older people with very severe chronic obstructive pulmonary disease (HELP-COPD), undertaken 4 weeks after discharge from hospital, which sought to identify and address the holistic care needs of people with severe COPD.
METHODS: This 6-month mixed-method feasibility pilot trial randomised (ratio 3:1) patients to HELP-COPD or usual care. We assessed the feasibility of using validated questionnaires as outcome measures and analysed the needs/actions recorded in the HELP-COPD records. Semi-structured interviews with a purposive sample of patients, carers and professionals explored the perceptions of HELP-COPD. Verbatim transcriptions and field notes were analysed using Normalisation Process Theory as a framework.
RESULTS: We randomised 32 patients (24 to HELP-COPD); 19 completed the study (death=3, ill-health=4, declined=6). The HELP-COPD record noted a mean of 1.6 actions/assessment, mostly provision of information or self-help actions: only five referrals were made. Most patients were positive about HELP-COPD, discussing their concerns and coping strategies in all domains, but the questionnaires were burdensome for some patients. Adaptation to their slowly progressive disability and a strong preference to rely on family support was reflected in limited acceptance of formal services. Professionals perceived HELP-COPD as addressing an important aspect of care, although timing overlapped with discharge planning.
CONCLUSIONS: The HELP-COPD intervention was well received by patients and the concept resonated with professionals, although delivery post discharge overlapped with existing services. Integration of brief holistic care assessments in the routine primary care management of COPD may be more appropriate.

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84. Phytother Res. 2015 Apr;29(4):518-25. doi: 10.1002/ptr.5259. Epub 2014 Nov 18.

Complementary usage of **Rhodiola crenulata** (L.) in chronic obstructive pulmonary disease patients: the effects on cytokines and T cells.

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Although chronic obstructive pulmonary disease (COPD) is an inflammatory disease predominantly involving T cells, no study of Rhodiola as an immunomodulator in COPD patients has been reported. In this study, COPD patients took Rhodiola crenulata 500 mg (n = 38) or placebo (starch/phosphate buffered saline) (n = 19) daily for 12 weeks and were compared with untreated, age-matched, and sex-matched non-COPD control subjects. Our results showed that serum levels of IL-2, IL-10, and IFN-γ in COPD patients before treatment are significantly higher than levels in non-COPD controls ($p < 0.05$). A significant decrease in IFN-γ was seen in the Rhodiola treatment group ($p < 0.05$) but not in the placebo group ($p > 0.05$). The results suggested that Rhodiola treatment had beneficial antiinflammation effects, lower COPD assessment test score and decreased high-sensitivity C-reactive protein, on COPD patients ($p < 0.05$). The effects of Rhodiola treatment on COPD patients were shown to decrease the IFN-γ concentration and CD8(+) count but increase the expressions of CD4(+) CD25(+) FOXP3(+) and CD4(+) CD25(+) CD45(+) FOXP3(+) in the blood significantly ($p < 0.05$). This is the first trial using Rhodiola as a complementary therapy for COPD patients. T cells play an important role in the pathogenesis of COPD through the increased expression of CD8(+) T cells and IFN-γ and may be a viable target for potential therapy.

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85. Int J Chron Obstruct Pulmon Dis. 2015 Mar 2;10:445-54. doi: 10.2147/COPD.S73864. eCollection 2015.

A pilot study: **mindfulness meditation** intervention in COPD.

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Living well with chronic obstructive pulmonary disease (COPD) requires people to manage disease-related symptoms in order to participate in activities of daily living. Mindfulness practice is an intervention that has been shown to reduce symptoms of chronic disease and improve accurate symptom assessment, both of which could result in improved disease management and increased wellness for people with COPD. A randomized controlled trial was conducted to investigate an 8-week mindful meditation intervention program tailored for the COPD population and explore the use of breathing timing parameters as a possible physiological measure of meditation uptake. Results demonstrated that those randomized to the mindful meditation intervention group (N=19) had a significant increase in respiratory rate over time as compared to those randomized to the wait-list group (N=22) (P=0.045). It was also found that the mindful meditation intervention group demonstrated a significant decrease in level of mindfulness over time as compared to the wait-list group (P=0.023). When examining participants from the mindful meditation intervention who had completed six or more classes, it was found that respiratory rate did not significantly increase in comparison to the wait-list group. Furthermore, those who completed six or more classes (N=12) demonstrated significant improvement in emotional function in comparison to the wait-list group (P=0.032) even though their level of mindfulness did not improve. This study identifies that there may be a complex relationship between breathing parameters, emotion, and mindfulness in the COPD population. The results describe good feasibility and acceptability for meditation interventions in the COPD population.

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86. BMC Complement Altern Med. 2015 Feb 7;15:21. doi: 10.1186/s12906-015-0540-8.

Appropriateness and acceptability of a **Tele-Yoga** intervention for people with heart failure and chronic obstructive pulmonary disease: qualitative findings from a controlled pilot study.

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BACKGROUND: Heart failure (HF) and chronic obstructive pulmonary disease (COPD) are highly prevalent and associated with a large symptom burden, that is compounded in a dual HF-COPD diagnosis. Yoga has potential benefit for symptom relief; however functional impairment hinders access to usual yoga classes. We developed a Tele-Yoga intervention and evaluated it in a controlled pilot trial. This paper reports on the appropriateness and acceptability of the intervention and the evaluation design.
METHODS: A controlled, non-randomised trial was conducted of an 8-week Tele-Yoga intervention versus an educational control (information leaflets mailed to participants with one phone call a week). Biweekly one-hour Tele-Yoga classes were implemented via multipoint videoconferencing that connected participants to live classes via an Internet connection to their televisions. Semi-structured qualitative interviews were conducted with participants post study exit to explore reasons for and experiences of participating, including views of study outcome measures and physiological tests. Transcribed interviews were analysed using thematic content analysis.
RESULTS: Fifteen people participated in the pilot study (7 in the intervention group, 8 in the control). Of these, 12 participants were interviewed, 6 in each group, mean age 71.2 years (SD 10.09); 3 were male. Themes are reported in the following categories: acceptability and appropriateness of the intervention, potential active ingredients of the intervention, acceptability and appropriateness of the control, participation in the research, and acceptability of the testing procedures. The intervention was acceptable and appropriate: the intervention group reported enjoying yoga and valuing the home-based aspect and participants described a high symptom burden and social isolation. However, technological problems resulted in poor video-streaming quality for some participants. Potential active ingredients included physical postures, breathing exercises and guidance in relaxation and meditation. The educational control intervention was acceptable and appropriate, with participants reporting little effect on their well-being and no impact on mechanisms hypothesised to explain yoga's effectiveness. The questionnaires and home physiological testing were acceptable to participants.
CONCLUSIONS: Tele-Yoga is an acceptable and appropriate intervention in people with HF and COPD and further research is warranted to refine the technology used in its delivery. Findings provide guidance for researchers working in tele-interventions, yoga, and similar populations.
TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT02078739 (4 March 2014).

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PMCID: PMC4324792
PMID: 25887324 [Indexed for MEDLINE]

87. Psychother Psychosom. 2015;84(1):37-50. doi: 10.1159/000367635. Epub 2014 Dec 24.

Efficacy of psychosocial interventions on psychological and physical health outcomes in chronic obstructive pulmonary disease: a systematic review and meta-analysis.

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BACKGROUND: Psychosocial intervention has been suggested as a potentially effective supplement to medical treatment in chronic obstructive pulmonary disease (COPD), but no reviews so far have quantified the existing research in terms of both psychological and physical health outcomes. We therefore conducted a systematic review and meta-analysis of controlled trials evaluating the effects of psychosocial interventions on psychological and physical health outcomes in COPD.
METHODS: Two independent raters screened 1,491 references for eligibility. Twenty independent studies investigating a total of 1,361 patients were included, assessed for their methodological quality, and subjected to meta-analytic evaluation.
RESULTS: After adjusting for potential publication bias, a statistically significant overall effect was found for psychological (Hedges' g = 0.38, 95% confidence interval, CI = 0.19-0.58; p < 0.001) outcomes. When analyzing individual intervention types, cognitive behavioral therapy appeared to be effective (g = 0.39, CI = 0.15-0.62; p = 0.001) for improving psychological outcomes. In contrast, for physical outcomes, only mind-body interventions (e.g. mindfulness-based therapy, yoga, and relaxation) revealed a statistically significant effect (g = 0.40; CI = 0.01-0.79; p = 0.042).
CONCLUSIONS: Taken together, the results lend support to psychosocial intervention as a tool in the management of COPD. However, due to indications of possible publication bias towards positive findings, the results should be interpreted with some caution, and more high quality research is needed.

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88. Respir Care. 2015 Jan;60(1):102-12. doi: 10.4187/respcare.03420. Epub 2014 Nov 4.

A COPD health management program in a community-based primary care setting: a randomized controlled trial.

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BACKGROUND: A number of effective strategies have been developed to improve the quality of life in patients with COPD. However, few have been implemented in patients with COPD at all stages in a community setting. This study evaluated the efficacy of a complex COPD health management intervention in rural communities in China.
METHODS: A randomized controlled trial including 8,217 subjects with COPD was implemented from May 2008 to May 2012 in 14 community health-care centers. The control group of subjects received usual care, whereas the management group of subjects participated in a health management program that included assessing the subjects' health status, giving regular health lectures, smoking cessation counseling, encouraging regular exercise, providing rehabilitative training and psychological counseling, and regular follow-up. As a primary outcome, we examined the changes in the BODE index. Secondary outcomes included depression and anxiety rates, current smoking rate, awareness of COPD, mortality, risk factors, respiratory medication use, hospital admissions, and emergency department visits.
RESULTS: After 4 y, the mean cumulative value of the BODE index increased by 0.7 per subject in the control group and decreased by 0.4 per subject in the health management group (difference of 1.1, 95% CI 0.2-2.0, P < .001). Health management reduced anxiety symptoms by 4.8%, depression symptoms by 6.6%, current smoking by 14.3%, mortality due to all causes by 9.0%, hospitalizations due to all causes by 16.1%, and emergency department visits due to all causes by 18.1% (P < .05 for all). However, it increased immunomodulator use by 58.9%, respiratory medication use by 14.1-21.9%, and awareness scores for COPD by 57.2% (P < .05 for all).
CONCLUSIONS: The health management program is an effective community-based strategy for the prevention and management of COPD in China, increasing awareness and knowledge among patients and practitioners and improving management within the limitations of access to pharmacotherapy.

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89. Int J Chron Obstruct Pulmon Dis. 2014 Nov 7;9:1253-63. doi: 10.2147/COPD.S70862. eCollection 2014.

Effects of **Tai Chi** on exercise capacity and health-related quality of life in patients with chronic obstructive pulmonary disease: a systematic review and meta-analysis.

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BACKGROUND: Tai Chi is a traditional Chinese mind-body exercise that has been widely practiced in the People's Republic of China for many centuries. This exercise has also been applied as a training modality in pulmonary rehabilitation programs for stable chronic obstructive pulmonary disease (COPD). This systematic review and meta-analysis aimed to assess the effects of Tai Chi on exercise capacity and health-related quality of life (HRQoL) in COPD patients.
METHODS: Electronic databases (PubMed, Embase, Web of Science, The Cochrane Library, Cumulative Index to Nursing and Allied Health Literature, ClinicalTrials.gov, China National Knowledge Infrastructure, and China Biology Medicine disc) were searched. Entries published from January 1980 to March 2014 were included in the search. Eligible studies included those that involved randomized controlled trials and those that lasted for at least 12 weeks. The primary outcome measures were six-minute walking distance (6 MWD), St George's Respiratory Questionnaire (SGRQ), and Chronic Respiratory Disease Questionnaire (CRQ). Effect estimates were pooled with random-effects meta-analysis.
RESULTS: Eleven articles involving 824 patients met the inclusion criteria. All included articles compared COPD patients in a Tai Chi group versus COPD patients in nonexercise and/or physical exercise groups. The meta-analysis showed that compared with the nonexercise group, the COPD patients practicing Tai Chi demonstrated significantly enhanced 6 MWD (mean difference 35.99, 95% confidence interval [CI] 15.63-56.35, P=0.0005), decreased SGRQ total score (mean difference -10.02, 95% CI -17.59, -2.45, P=0.009), and increased CRQ total score (mean difference 0.95, 95% CI 0.22-1.67, P=0.01). Compared with the physical exercise group, the Tai Chi group showed significantly reduced SGRQ total score (mean difference -3.52, 95% CI -6.07, -0.97, P=0.007), but no statistical significance was found for 6 MWD between the two groups (mean difference 13.65, 95% CI -1.06, 28.37, P=0.07) in COPD patients.
CONCLUSION: Preliminary evidence suggests that Tai Chi has beneficial effects on exercise capacity and HRQoL in COPD patients. This exercise can be recommended as an effective alternative training modality in pulmonary rehabilitation programs. Further studies are required to support the preliminary evidence and to observe the long-term effects of Tai Chi.

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90. Altern Ther Health Med. 2014 Nov-Dec;20(6):10-23.

Acupuncture therapies for chronic obstructive pulmonary disease: a systematic review of randomized, controlled trials.

Coyle ME, Shergis JL, Huang ET, Guo X, Di YM, Zhang A, Xue CC.

CONTEXT: Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality and is projected to be the third leading cause of death by 2030. Acupuncture, a traditional Chinese therapy, has been used for more than 2000 years to treat respiratory conditions and may treat COPD effectively. In previous literature reviews, researchers have noted significant heterogeneity among the included studies, and none of the reviewers found convincing evidence to recommend routine use of acupuncture therapies for COPD.
OBJECTIVE: This literature review examined the efficacy and safety of acupuncture therapies for patients with COPD in improving lung function, increasing exercise capacity, creating positive subjective changes in symptoms, and enhancing health-related quality of life (QoL).
DESIGN: The research team searched the following electronic databases from inception to April 2013: PubMed, the Cochrane Central Register of Controlled Trials (CENTRAL), the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Allied and Complementary Medicine Database (AMED), Embase (Elsevier), the China National Knowledge Infrastructure (CNKI), Chongqing VIP Information Company (CQVIP), the Chinese Biomedical Literature Database (CBM), and Wanfang Data. The review included randomized, controlled trials (RCTs) that examined the benefits of acupuncture or other related therapies for treatment of COPD. Data were extracted into a predefined form; risk of bias was assessed according to the Cochrane Risk of Bias tool; and statistical analyses were made.
RESULTS: In total, 16 studies were included in the review. The research team found that the acupuncture therapies used in these studies improved health-related QoL. The team's conclusions, comparing results from the interventions with placebo, were based on data from 3 questionnaires that the studies used: (1) the St George's Respiratory Questionnaire (SGRQ), with a mean difference (MD) of -8.33 units (95% CI, -13.13 to -3.53); (2) dyspnea on the Medical Research Council's (MRC's) dyspnea scale, with an MD of -0.34 units (95% CI, -0.38 to -0.30); and (3) the Dyspnea Visual Analogue Scale (DVAS), with an MD of -8.85 mm (95% CI, -11.81 to -5.89). Compared with placebo, acupuncture therapies also increased the distance walked in 6 min (6MWT), with an MD of -28.14 (95% CI, 23.92 to 32.36) compared with placebo. No benefit was seen on measures of lung function when acupuncture therapies were compared with either placebo or drug therapy.
CONCLUSION: Acupuncture therapies may result in clinically important improvements in QoL and dyspnea. Future high-quality RCTs should be undertaken to provide conclusive evidence concerning the benefits of acupuncture therapies in the treatment of COPD.

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91. J Cardiopulm Rehabil Prev. 2014 Nov-Dec;34(6):367-77. doi: 10.1097/HCR.0000000000000062.

Traditional Chinese exercises for pulmonary rehabilitation: evidence from a systematic review.

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BACKGROUND: Qigong (QG) and tai chi (TC), alternative forms of exercise based on traditional Chinese medicine, are reported to be beneficial to patients with chronic obstructive pulmonary disease (COPD). This systematic review analyzed the evidence and made recommendations for clinical applications and future research.
METHODS: Key words "qigong," "tai chi," "COPD," and "randomized controlled trial" or corresponding terms in Chinese were searched using MEDLINE, EMBASE, and 3 Chinese databases. Randomized controlled trials (RCTs) on QG and/or TC for patients with COPD were included. The quality of each RCT was appraised using the Physiotherapy Evidence Database (PEDro) scale. Outcome variables that were reported by greater than one-third of the RCTs were pooled for analysis.
RESULTS: A total of 37 RCTs were identified, with 12 matching the inclusion criteria. The average PEDro score was 5.25, indicating that limitations were noted in the methodology. Only forced expiratory volume in the first second of expiration/forced vital capacity ratio and the 6-Minute Walk Test (6MWT) distance were common outcome measures in greater than one-third of the RCTs. The weighted mean differences and the 95% CI estimation for mean gains in forced expiratory volume in the first second of expiration/forced vital capacity ratio and mean gains in 6MWT distance between QG/TC and conventional exercise groups were 0.62 (95% CI, 0.30-0.93) and 12.18 (95% CI, 10.32-14.05) m, respectively. The corresponding values between QG/TC and no exercise groups were 2.90 (95% CI, 2.37-3.43) and 37.77 (95% CI, 35.42-40.12) m, respectively.
CONCLUSIONS: This systematic review supports the therapeutic value of QG/TC in patients with COPD and highlights areas for future research.

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