Table S1 – Design of pulmonary rehabilitation programs during acute exacerbations of chronic obstructive pulmonary disease (n=42).

Study and Country	Population	Timing & Setting	Type of intervention	Duration and intensity of intervention	Duration and frequency of sessions	Outcomes and outcome measures	Results
Kirsten et al., 1998[32] Germany	Patients with AECOPD EG: n=15; 80.0%♂; 62.3±9.1yrs; FEV_1 34.3±2.6%pred CG: n=14; 100.0%♂; 65.6±11.8yrs; FEV_1 37.7±3.4%pred	6-8 days after admission Inpatient	EG: walk CG: no regular exercise	EG: 10 days; ≥75% of treadmill walking distance CG: NA	EG: 5 sessions/day CG: NA	Exercise capacity – 6MWD (m)	EG: Pre 237.0±28.0 vs Post 420.0±42.0, p<0.0001 CG: Pre 230.0±23.0 vs Post 255.0±27.0, p=0.004 EG vs CG, p<0.001 ES=5.0
						Exercise capacity – VO_2 (mL/kg/min)	At the same workload EG: Pre 12.7±0.8 vs Post 10.6±0.6, p<0.001 CG: Pre 13.4±1.0 vs Post 12.8±0.8, p>0.05 EG vs CG, p<0.05 ES=-1.8
						Lung function – FEV_1 (%pred)	EG: Pre 34.3±2.6 vs Post 38.2±3.1, p=0.03 CG: Pre 37.7±3.4 vs Post 38.1±3.0, p>0.05 EG vs CG, p>0.05 ES=1.1
						Lung function – Inspiratory capacity (L)	EG: Pre 2.0±0.7 vs Post 2.4±1.0, p<0.05 CG: Pre 2.1±0.8 vs Post 2.0±0.8, p>0.05 EG vs CG, p>0.05 ES=0.6
						Vital signs & SpO_2 – Heart rate (bpm)	At the same workload EG: Pre 112.1±2.0 vs Post 102.4±3.0, p=0.008 CG: Pre 107.9±3.3 vs Post 107.6±3.5, p>0.05 ES=-3.1
						Vital signs & SpO_2 – Respiratory rate (cpm)	At the same workload EG: Pre 24.5±1.5 vs Post 21.8±1.0, p=0.010 CG: Pre 26.0±1.3 vs Post 24.4±1.8, p>0.05

						Outcome	Results
							ES=-0.8
						Symptoms: Dyspnoea – modified Borg scale	At the same workload EG: Pre 3.9±0.2 vs Post 2.7±0.2, p=0.002 CG: Pre 4.5±0.3 vs Post 4.2±0.4, p>0.05 EG vs CG, p<0.05 ES=-3.1
						Symptoms: Dyspnoea – Transition Dyspnoea Index score	EG: p<0.001 CG: p<0.002 EG vs CG, p<0.05
Nava, 1998[37] Italy	Patients admitted in the RICU with AECOPD EG: n=60; 63.3%♂; 65.0±6.0yrs; FEV$_1$ 31.0±12.0%pred CG: n=20; 65.0%♂; 67.0±9.0yrs; FEV$_1$ 33.0±17.0%pred	3-5 days after admission Inpatient	EG: standard medical therapy plus stepwise PR – mobilization, lower limbs strength training, postural drainage and cough education (if needed), progressive ambulation, respiratory muscle training, cycling, climb stairs and treadmill walking CG: standard medical therapy plus progressive ambulation	Until discharge EG: Respiratory muscle training – 50% of maximal inspiratory pressure; Cycling – 15W, dyspnoea <6 at modified Borg scale; Treadmill walking – 70% of the load achieve at incremental test Progression: organized in 4 levels of training; based on patient's clinical condition CG: NS	EG: 2 sessions/day; 30-45min/session CG: NS	Exercise capacity – 6MWD (m)	EG: Pre vs Post, p<0.001 CG: Pre vs Post, p>0.05 EG vs CG, p<0.001
						Muscle strength – Maximal inspiratory pressure (cmH$_2$O)	EG: Pre 45.0±12.0 vs Post 61.0±14.0, p<0.05 ES=1.2
						Lung function – FEV$_1$ (%pred)	EG: Pre 34.0±13.0 vs Post 38.0±11.0, p>0.05 CG: Pre 36.0±11.0 vs Post 40.0±13.0, p>0.05 EG vs CG, p>0.05 ES=0.0
						Vital signs & SpO$_2$ – Heart rate (bpm)	At rest EG: Pre 91.0±12.0 vs Post 80.0±9.0, p<0.05 CG: Pre 95.0±13.0 vs Post 83.0±7.0, p<0.05 ES=0.1
						Symptoms: Dyspnoea – Visual Analog Scale	EG: Pre vs Post, p<0.001 CG: Pre vs Post, p<0.05 EG vs CG, p<0.01
						Length of hospitalization – No of days in the RICU	EG 38.1±14.3 vs CG 33.2±11.7, p>0.05 ES=0.4
						Mortality – No (%) of patients	During hospitalization EG 12 (20.0%) vs CG 4 (20.0%), p>0.05 OR=1.0

Study	Population	Timing/Setting	Intervention	Duration	Frequency	Outcome	Results
Bellone et al., 2002[54] Italy	Hypersecretive patients with acute hypercapnic respiratory failure due to AECOPD EG: n=13; 61.5%♂; 65.0±7.8yrs; FEV_1 0.9±0.4L CG: n=14; 64.3%♂; 64.0±7.7yrs; FEV_1 0.9±0.3L	Within 1h from the beginning of non-invasive positive pressure ventilation; Inpatient	EG: assisted coughing plus PEP mask CG: assisted coughing	3 days	3 sessions/day; 30-40min/session	Symptoms: Sputum – Production of sputum (g)	EG: Post 9.6±3.9 vs $Post_{1h}$ 13.2±4.1, $p<0.05$ CG: Post 4.7±2.5 vs $Post_{1h}$ 5.2±1.9, $p>0.05$ EG vs CG: Post $p<0.01$ ES=1.0
						Mortality – No of patients	During hospitalization EG 0 vs CG 1, $p>0.05$ OR=0.3
Hernandez et al., 2003[56] Spain	Patients admitted with AECOPD EG: n=121; 96.7%♂; 71.0±9.9yrs; FEV_1 43.0%pred CG: n=101; 97.0%♂; 70.5±9.4yrs; FEV_1 41.0%pred	EG: Within 24h of discharge; Home CG: NS	EG: usual care plus home-based hospitalization (i.e., sputum clearance, education, upper and lower limbs training) CG: usual care (i.e., pharmacological treatment)	EG: 8 weeks; ≤5 home visits plus phone calls (number of nurse visits 1.66±1.03 [range 0-4]; number of phone calls 2.33±2.05 [0-10]) CG: NS	EG: first session 1h, following sessions duration decided by the nurse CG: NS	HRQoL – SGRQ score	Symptoms score Pre/Post change: EG -8.7 vs CG -8.4 Activity score Pre/Post change: EG -4.8 vs CG -0.1 Impact score Pre/Post change: EG -7.6 vs CG -1.9, p=0.03 Total score Pre/Post change: EG -6.9 vs CG -2.4, p=0.05
						HRQoL – SF-12 score	Physical score Pre/Post change: EG 1.7 vs CG 1.9 Mental score Pre/Post change: EG 2.0 vs CG -0.1
						Length of hospitalization – No of days hospitalized	EG 1.7±2.3 vs CG 4.2±4.1, $p<0.001$ ES=-0.8
						Hospital readmission – No (%) of patients	At 2 months EG 23 (20.0%) vs CG 26 (27.7%), $p>0.05$ OR=0.7
						Mortality – No (%) of patients	At 2 months EG 5 (4.1%) vs CG 7 (6.9%) OR=0.6
						Disease knowledge –	Improvement in knowledge

						% of patients	EG 58.0% vs CG 27.0%, p<0.01 OR=3.8
						Patients' satisfaction – Questionnaire score	At 8 weeks EG 8.0 vs CG 7.5, p=0.03
Yohannes et al., 2003[52] United Kingdom	Patients admitted with AECOPD EG$_1$: n=26; 50.0%♂; 75.0±7.0yrs; FEV$_1$ 38.0±11.0%pred EG$_2$: n=28; 53.6%♂; 75.0±7.0yrs; FEV$_1$ 38.0±15.0%pred EG$_3$: n=28; 42.9%♂; 74.0±8.0yrs; FEV$_1$ 38.0±11.0%pred EG$_4$: n=28; 67.9%♂; 74.0±7.0yrs; FEV$_1$ 39.0±10.0%pred	At least 2 days after admission and when acute phase had passed Inpatient	Walking in the ward EG$_1$: gutter frame with supplemental oxygen EG$_2$: gutter frame with supplemental air EG$_3$: rollator with supplemental oxygen EG$_4$: rollator with supplemental air	Until discharge Within limits of tolerance	3 sessions/day; ≤15min/session	Functionality – Barthel index	EG$_1$: Pre 16.2±2.4 vs Post 17.4±2.2 EG$_2$: Pre 16.3±2.4 vs Post 17.9±2.2 EG$_3$: Pre 18.4±1.3 vs Post 19.0±1.2 EG$_4$: Pre 17.9±1.8 vs Post 18.5±1.5 Between groups p>0.05 EG$_1$ vs EG$_2$: ES=-0.2 EG$_1$ vs EG$_3$: ES=0.3 EG$_1$ vs EG$_4$: ES=0.3 EG$_2$ vs EG$_3$: ES=0.5 EG$_2$ vs EG$_4$: ES=0.5 EG$_3$ vs EG$_4$: ES=0.0 Change Gutter frame (EG$_1$ and EG$_2$) vs rollator (EG$_3$ and EG$_4$): 1.2±1.8 vs 0.6±0.9, p=0.003
						Symptoms: Perceived exertion – Borg scale	EG$_1$: Pre 14.2±3.3 vs Post 13.4±3.5 EG$_2$: Pre 14.1±2.7 vs Post 12.6±3.2 EG$_3$: Pre 13.7±2.5 vs Post 12.1±2.6 EG$_4$: Pre 12.2±2.8 vs Post 13.0±3.1 Between groups p>0.05 EG$_1$ vs EG$_2$: ES=0.2 EG$_1$ vs EG$_3$: ES=0.3 EG$_1$ vs EG$_4$: ES=-0.5 EG$_2$ vs EG$_3$: ES=0.0 EG$_2$ vs EG$_4$: ES=-0.8 EG$_3$ vs EG$_4$: ES=-0.9
						Length of hospitalization – No of days hospitalized	EG$_1$: 11.7±12.1 EG$_2$: 10.0±11.4 EG$_3$: 10.0±12.5 EG$_4$: 8.9±12.5

							Between groups p>0.05 EG_1 vs EG_2: ES=0.1 EG_1 vs EG_3: ES=0.1 EG_1 vs EG_4: ES=0.2 EG_2 vs EG_3: ES=0.0 EG_2 vs EG_4: ES=0.1 EG_3 vs EG_4: ES=0.1
						Hospital readmission – No (%) of patients	At 1 month EG_1: 6 (30.0%) EG_2: 4 (20.0%) EG_3: 6 (30.0%) EG_4: 4 (20.0%) EG_1 vs EG_2: OR=1.8 EG_1 vs EG_3: OR=1.1 EG_1 vs EG_4: OR=1.8 EG_2 vs EG_3: OR=0.6 EG_2 vs EG_4: OR=1.0 EG_3 vs EG_4: OR=1.6
Man et al., 2004[35] United Kingdom	Patients admitted with AECOPD EG: n=21; 42.9%♂; 69.6±9.2yrs; FEV_1 41.7±18.9%pred CG: n=21; 38.1%♂; 70.7±9.3yrs; FEV_1 36.7±14.9%pred	EG: within 10 days of hospital discharge; Community CG: NS	EG: early PR program – aerobic walking and cycling, upper and lower limb strength training, education; individualized home exercise program; home diaries with disease specific information CG: usual care plus home diaries with disease specific information	EG: 8 weeks CG: NS	EG: 2 sessions/week; 2h/session (i.e., 1h of exercise plus 1h of education); at least 20min/day of individualized home exercise CG: NS	Exercise capacity – ISWT (m) HRQoL – SGRQ score	EG: 120.0 [10.0; 330.0] vs Post 210.0 [40.0; 400.0] CG: 115.0 [20.0; 190.0] vs Post 90.0 [10.0; 250.0] EG vs CG, p<0.001 Symptoms score EG: Pre 73.1±18.2 vs Post 69.1±16.7 CG: Pre 77.7±14.6 vs Post 76.8±15.4 EG vs CG, p=0.48 ES=-0.2 Activity score EG: Pre 81.3±15.1 vs Post 70.5±19.6 CG: Pre 87.4±8.7 vs Post 84.6±15.0 EG vs CG, p=0.10 ES=-0.5 Impact score EG: Pre 53.7±17.7 vs Post 30.8±16.9 CG: Pre 56.8±19.2 vs Post

		52.3±16.6 EG vs CG, p=0.001 ES=-1.0
		Total score EG: Pre 65.4±14.1 vs Post 49.3±15.3 CG: 69.6±13.5 vs Post 66.2±13.6 EG vs CG, p=0.002 ES=-0.9
	HRQoL – CRQ score	Dyspnoea score EG: Pre 11.8±5.0 vs Post 19.4±5.2 CG: Pre 11.4±4.4 vs Post 13.5±4.3 EG vs CG, p=0.003 ES=1.1 Fatigue score EG: Pre 9.9±2.8 vs Post 17.4±5.4 CG: Pre 11.6±6.1 vs Post 13.8±5.1 EG vs CG, p=0.004 ES=1.0 Emotion score EG: Pre 21.1±5.8 vs Post 32.5±7.2 CG: Pre 27.0±12.6 vs Post 29.7±11.4 EG vs CG, p=0.008 ES=0.9 Mastery score EG: Pre 10.8±4.8 vs Post 20.7±5.0 CG: Pre 13.6±7.4 vs Post 16.1±7.0 EG vs CG, p<0.001 ES=1.2
	HRQoL – SF-36 score	Physical component score EG: Pre 26.3±14.6 vs Post 43.0±20.0 CG: Pre 30.4±19.9 vs Post 36.4±22.2 EG vs CG, p=0.057

							ES=0.5 Mental component score EG: Pre 30.6±14.2 vs Post 56.3±24.0 CG: Pre 41.6±21.9 vs Post 47.2±24.2 EG vs CG, p=0.02 ES=0.9
						Hospital readmission – Rate of readmissions (%)	At 3 months EG 35.0 vs CG 57.1, p=0.30 OR=0.4
Murphy et al., 2005[36] Ireland	Patients discharge from the hospital due to AECOPD EG: n=13; 53.8%♂; 67.0±9.7yrs; FEV$_1$ 38.0±12.0%pred CG: n=13; 76.9%♂; 65.0±11.0yrs; FEV$_1$ 42.0±12.0%pred	EG: From discharge; Home CG: NS	EG: supervised home exercise program, including aerobic training (step up/down stairs, sit/stand from a chair) and upper limb resistance training, plus home exercise diary CG: standard medical treatment without any form of rehabilitation exercises or lifestyle changes advice	EG: 6 weeks; symptoms score between 3-5 at modified Borg scale CG: NS	EG: 2 sessions/week; 30-40min/sessions; at least 15min/day of exercise at the days without sessions CG: NA	Exercise capacity – ISWT (m)	EG: Pre 198.0±95.0 vs Post 304.0±136.0, p<0.001 CG: Pre 205.0±189.0 vs Post 215.0±185.0, p>0.05 ES=0.6
						Exercise capacity – 3min step test (s)	EG: Pre 119.0±41.0 vs Post 163.0±26.0, p<0.001 CG: Pre 129.0±50.0 vs Post 131.0±44.0, p>0.05 ES=1.0
						Muscle strength – handgrip (kg)	Pre/Post change: EG 1.0, p>0.05 CG p>0.05
						Muscle strength – knee extension kg (%)	Pre/Post change: Right EG 4.4 (25.0%), p>0.05 CG -1 to -2, p>0.05 Left EG 5.7 (38.0%), p>0.05 CG -1 to -2, p>0.05
						Vital signs & SpO$_2$ – Heart rate (bpm)	At ISWT EG Pre 107.0±16.0 vs Post 102.0±36.0, p>0.05 CG Pre 117.0±14.0 vs Post 117.0±17.0, p>0.05 ES=-0.2 At 3min step test EG Pre 112.0±13.0 vs Post 116.0±13.0, p>0.05 CG Pre 118.8±15.0 vs Post

		113.0±10.0, p>0.05 ES=0.7
	Vital signs & SpO$_2$ – SpO$_2$ (%)	At ISWT EG Pre 89.0±4.8 vs Post 91.0±2.6, p>0.05 CG Pre 91.0±5.1 vs Post 91.0±4.7, p>0.05 ES=0.4 At 3min step test EG Pre 89.0±4.1 vs Post 91.0±3.0, p>0.05 CG Pre 91.0±4.0 vs Post 91.0±3.0, p>0.05 ES=0.6
	Symptoms: Dyspnoea – modified Borg scale	EG: Pre 0.2±0.6 vs Post 0.1±0.3, p>0.05 CG: Pre 0.5±1.1 vs Post 0.0, p>0.05 ES=0.6
	Symptoms: Dyspnoea – MRC score	EG: Pre 3.1±1.1 vs Post 1.8±0.9, p<0.05 CG: Pre 2.8±1.1 vs Post 1.8±0.9, p<0.05 ES=-0.3
	HRQoL – SGRQ score	Symptoms score EG: Pre 72.4±13.0 vs Post 74.0±9.2, p>0.05 CG: Pre 74.9±16.0 vs Post 67.2±17.3, p>0.05 ES=0.6 Activity score EG: Pre 81.0±40.0 vs Post 55.7±23.0, p<0.05 CG: Pre 63.1±20.0 vs Post 52.4±29.0, p>0.05 ES=-0.5 Impact score EG: Pre 63.0±17.7 vs Post 43.7±14.0, p<0.05 CG: Pre 44.7±20.0 vs Post 41.7±25.6, p>0.05

						Outcome	Results
							ES=-0.8 Total score EG: Pre 70.2±14.2 vs Post 52.4±15.0, p<0.05 CG: Pre 65.3±17.0 vs Post 56.5±24.0, p<0.05 ES=-0.5
						HRQoL – EuroQol score	EG: Pre 0.7±0.2 vs Post 0.8±0.2, p<0.05 CG: Pre 0.7±0.2 vs Post 0.7±0.2, p>0.05 ES=0.9 Visual Analog Scale EG: Pre 62.0±20.8 vs Post 79.0±12.6, p<0.05 CG: Pre 62.0±18.0 vs Post 69.0±27.0, p>0.05 ES=0.5
						New exacerbations – No of patients	At 3 months EG 0 vs CG 3, p=0.06 OR=0.1 At 6 months EG 2 vs CG 5, p=0.10 OR=0.3
Casas et al., 2006[19] Belgium and Spain	Patients discharge from the hospital due to AECOPD EG: n=65; 76.9%♂; 70.0±9.0yrs; FEV_1 43.0±20.0%pred CG: n=90; 87.8%♂; 72.0±9.0yrs; FEV_1 41.0±15.0%pred	At hospital discharge Inpatient and Home	EG: educational program, individual care plan, accessibility to case manager CG: usual care	EG: NS CG: NS	EG: face-to face sessions plus weekly phone calls CG: NS	Hospital readmission – No of readmissions	At 12 months EG 0.9±1.3 vs CG 1.3±1.7, p=0.028 HR=0.6, 95%CI (0.4-0.9), p=0.01
						Mortality – No (%) of patients	At 12 months EG 12 (19.0%) vs CG 14 (16.0%), p=0.67 OR=1.2
Garcia-Aymerich et al., 2007[47] Spain	Patients admitted with AECOPD EG: n=21; 80.0%♂; 72.0±10.0yrs; FEV_1 1.2 [0.8; 1.4]L CG: n=41; 90.0%♂; 73.0±9.0yrs; FEV_1	At hospital discharge Inpatient and Home	EG: usual care plus education, care plan and accessibility to case manager CG: usual care, i.e., medication	EG: NS CG: NS	EG: 2 face-to-face sessions plus phone calls CG: NS	Lung function – FEV_1 (L)	Pre/Post change: EG 0.0±0.1 vs CG 0.1±0.4, p=0.569 ES=-0.3
						Lung function – FEV_1/FVC	Pre/Post change: EG -0.8±8.2 vs CG -1.7±17.9, p=0.863 ES=0.1
						Physical activity levels	At 12 months

1.0 [0.8; 1.5]L

	– No (%) of patients	Any physical activity: EG 18 (86.0%) vs CG 34 (83.0%), p=0.778 OR=1.2 Regular walking or exercise: EG 18 (86.0 %) vs CG 32 (78.0%), p=0.470 OR=1.7
	Symptoms: Dyspnoea – MRC score	Pre/Post change: EG -0.5±1.1 vs CG -0.2±1.4, p=0.299 ES=0.0
	HRQoL – SGRQ score	Symptoms score Pre/Post change: EG -24.4±19.7 vs CG -17.1±24.4, p=0.243 ES=-0.3 Activity score Pre/Post change: EG -5.1±16.6 vs CG -8.4±20.0, p=0.523 ES=0.2 Impact score Pre/Post change: EG -13.7±15.6 vs CG -11.3±16.3, p=0.587 ES=-0.1 Total score Pre/Post change: EG -13.4±13.4 vs CG -11.0±15.6, p=0.560 ES=-0.2
	HRQoL – EuroQol score	Pre/Post change: EG 1.6±1.8 vs CG 0.9±2.1, p=0.273 ES=0.3
	Hospital readmission – No of readmissions	At 12 months EG 0.0 [0.0; 1.0] vs CG 1.0 [0.0; 1.0], p=0.083
	Disease knowledge – No (%) of patients	At 12 months Name of disease EG 17 (81.0%) vs CG 18 (44.0%), p=0.005 OR=1.4 Identification of AECOPD EG 17 (85.0%) vs CG 9 (22.0%), p<0.001

							OR=15.1 Early treatment of AECOPD EG 19 (90.0%) vs CG 27 (66.0%), p=0.036 OR=4.9
						Patients' satisfaction – No (%) of patients	At 12 months EG 21 (100.0%) vs CG 34 (92.0%), p=0.180 OR=9.3
Eaton et al., 2009[29] Australia	Patients admitted with AECOPD EG: n=47; 45.0%♂; 70.1±10.3yrs; FEV_1 36.0±16.0%pred CG: n=50; 42.0%♂; 69.7±9.4yrs; FEV_1 35.0±16.0%pred	EG: as soon as medical appropriate (2.6, 95% CI: 1.9–3.3 days after admission); Inpatient and Outpatient CG: NS	EG: PR program – walking, upper and lower limb strengthening exercises, education CG: usual care	EG: until discharge plus 8 weeks CG: NS	EG: Inpatient – 30min/day; Outpatient – 2 sessions/week, 1h/session CG: NS	Exercise capacity – 6MWD (m)	EG: Pre 249.0±141.0 vs Post 362.0±119.0, p<0.05 CG: Pre 218.0±118.0 vs Post 313.0±126.0, p<0.05 EG vs CG, p>0.05 ES=0.1
						Vital signs & SpO_2 – SpO_2 (%)	EG: Pre 93.6±2.4 vs Post 94.9±1.4 CG: Pre 92.4±3.6 vs Post 93.3±2.8 EG vs CG, p>0.05 ES=0.1
						Symptoms: Dyspnoea – modified Borg scale	At rest EG: Pre 1.4±1.2 vs Post 0.9±0.9 CG: Pre 1.8±1.3 vs Post 1.1±1.2 EG vs CG, p>0.05 ES=0.2
						Symptoms: Dyspnoea – mMRC score	EG: Pre 2.1±1.2 vs Post 1.5±1.0 CG: Pre 2.3±1.2 vs Post 1.9±1.2 EG vs CG, p>0.05 ES=-0.2
						Symptoms: Anxiety – HADS score	EG: Pre 7.9±4.3 vs Post 4.6±3.4 CG: Pre 8.7±4.6 vs Post 7.2±4.9 EG vs CG, p=0.02 ES=-0.4
						Symptoms: Depression – HADS score	EG: Pre 5.6±3.0 vs Post 4.5±4.2 CG: Pre 6.5±4.4 vs Post 5.7±3.9 EG vs CG, p>0.05 ES=-0.1
						Disease severity – BODE index	EG: Pre 5.5±2.3 vs Post 3.7±1.9 CG: Pre 5.6±2.7 vs Post 4.5±2.5

							EG vs CG, p>0.05 ES=-0.3
						HRQoL – CRQ score	Dyspnoea score EG: Pre 3.0±1.4 vs Post 4.0±1.4 CG: Pre 3.2±1.4 vs Post 4.0±1.7 EG vs CG, p>0.05 ES=0.1 Fatigue score EG: Pre 2.6±1.3 vs Post 4.4±1.2 CG: Pre 2.8±1.2 vs Post 3.8±1.5 EG vs CG, p=0.02 ES=0.6 Emotion score EG: Pre 3.8±1.3 vs Post 4.9±1.4 CG: Pre 3.8±1.2 vs Post 4.4±1.5 EG vs CG, p<0.05 ES=0.4 Mastery score EG: Pre 3.4±1.5 vs Post 5.1±1.6 CG: Pre 3.2±1.2 vs Post 4.6±1.6 EG vs CG, p<0.05 ES=0.2
						HRQoL – SF-36 score	Physical component score EG: Pre 27.0±7.2 vs Post 35.7±9.3 CG: Pre 29.0±7.9 vs Post 31.8±10.8 EG vs CG, p=0.04 ES=0.7 Mental component score EG: Pre 41.8±8.8 vs Post 49.2±15.6 CG: Pre 39.2±11.2 vs Post 44.0±13.7 EG vs CG, p>0.05 ES=0.2
						Hospital readmission – Risk (%)	At 3 months EG 16.0, 95%CI (0.0-32.0) vs CG 32.0, 95%CI (19.0-45.0)
Kodric et al., 2009[48]	Patients hospitalized with AECOPD	Inpatient	EG: standard medical therapy plus	EG: ELTGOL for 7 days	EG: 2 sessions/day; 30-40min/session	Lung function – FEV_1 (%pred)	EG: Pre 55.6±27.6 vs Post 64.4±34.0, p=0.001

Italy	EG: n=30; 66.7%♂; 71.3±8.4yrs; FEV_1 55.6±27.6%pred CG: n=29; 72.4%♂; 69.1±8.3yrs; FEV_1 52.3±18.7%pred	chest physiotherapy – ELTGOL CG: standard medical therapy (i.e., steroids, bronchodilators and antibiotics)	Medical treatment until discharge	CG: NA		CG: Pre 52.3±18.7 vs Post 57.9±23.9, p=0.008 EG vs CG, p=0.405 ES=0.1
					Lung function – FEV_1/FVC	EG: Pre 50.9±13.1 vs Post 52.9±14.6, p=0.127 CG: Pre 47.4±12.8 vs Post 47.4±14.2, p=0.823 EG vs CG, p=0.152 ES=0.1
					Vital signs & SpO_2 – SpO_2 (%)	EG: Pre 90.0±6.3 vs Post 93.1±2.9, p=0.002 CG: 89.6±7.5 vs Post 92.1±3.4, p=0.030 EG vs CG, p=0.310 ES=0.1
					Symptoms: Dyspnoea – modified Borg scale	EG: Pre 5.2±2.7 vs Post 3.0±1.8, p<0.001 CG: Pre 4.6±2.0 vs Post 4.3±1.5, p=0.074 EG vs CG, p=0.004 ES=-0.9
					Symptoms: Dyspnoea – MRC score	EG: Pre 2.9±1.3 vs Post 2.5±1.4, p=0.005 CG: Pre 3.0±1.2 vs Post 2.9±1.1, p=0.375 EG vs CG, p=0.332 ES=-0.2
					Symptoms: Sputum – Sputum production (mL/day)	EG: Pre 19.5±17.2 vs Post 6.8±7.6, p<0.001 CG: 13.6±13.6 vs Post 8.2±9.4, p=0.001 Pre/Post change: EG 17.0±6.4 vs CG 10.2±9.7, p=0.076 ES=-0.6
					HRQoL – SGRQ score	Total score EG: Pre 59.1±17.3 vs Post 54.7±17.7, p=0.012 CG: 57.4±18.7 vs Post 54.4±19.2, p=0.074 EG vs CG, p=0.961

Study	Population	Timing; Setting	Intervention	Duration	Frequency	Outcome	Results
							ES=-0.1
						Length of hospitalization – No of days hospitalized	EG 9.5±3.2 vs CG 10.0±2.4, p=0.530 ES=-0.2
Babu et al., 2010[25] India	Patients with AECOPD EG: n=19; 73.7%♂; 65.0±15.9yrs; PEF 81.1±24.5L/min CG: n=19; 68.4%♂; 58.0±13.3yrs; PEF 84.7±30.8L/min	At the time of admission; Inpatient	EG: regular physical therapy plus on-call physical therapy CG: only regular physical therapy – positioning, relaxation, breathing control, airway clearance techniques (active cycle breathing technique, huffing, assisted coughing)	Until discharge; NA	EG: 2 sessions/day plus on demand CG: 2 sessions/day	Exercise capacity – 6MWD (m)	At discharge EG: 387.9±110.1 vs CG: 289.7±103.2, p=0.004 ES=0.9
						Lung function – PEF (L/min)	EG: Pre 81.1±24.5 vs Post 211.6±51.1 CG: Pre 94.7±30.8 vs Post 159.5±67.8 EG vs CG, p=0.01 ES=1.4
						Lung function – Sustained maximal inspiration (cc/s)	EG: Pre 321.1±196.0 vs Post 652.6±226.9 CG: Pre 368.4±292.6 vs Post 531.6±210.9 EG vs CG, p=0.09 ES=0.7
						Symptoms: Dyspnoea – New York Heart Association functional grade	EG: Pre 3.6±0.5 vs Post 1.2±1.0 CG: Pre 3.3±0.7 vs Post 1.3±0.7 EG vs CG, p=0.695 ES=-0.5
						Symptoms: Perceived exertion – Borg scale	EG: Pre 8.0±1.7 vs Post 2 [0.0; 6.0] CG: Pre 7.0±2.0 vs Post 3 [0.0; 7.0] EG vs CG, p=0.12
						Length of hospitalization – No of days hospitalized	EG 4.3±2.5 vs CG 5.1±2.4, p=0.361 ES=-0.3
Seymour et al., 2010[38] United Kingdom	Patients admitted with AECOPD EG: n=30; 43.3%♂; 67.0±10.0yrs; FEV$_1$ 52.0±20.0%pred CG: n=30; 46.7%♂; 65.0±10.0yrs; FEV$_1$ 52.0±22.0%pred	EG: within 1 week of hospital discharge, Outpatient CG: NS	EG: standard PR classes – exercise (limb strengthening and aerobic activities), education CG: usual care	EG: 8 weeks CG: NS	EG: 2 sessions/week, 2hours/session CG: NS	Exercise capacity – ISWT (m)	EG: Pre 147.0±98.0 vs Post 216.0±126.0 CG: Pre 165.0±96.0 vs Post 183.0±98.0 EG vs CG, p<0.01 ES=0.5
						Exercise capacity – ESWT (m)	EG: Pre 214.0±402.0 vs Post 402.0±400.0

		CG: Pre 224.0±175.0 vs Post 224.0±133.0 EG vs CG, p=0.02 ES=0.6
	Muscle strength – QMVC (kg)	EG: Pre 22.3±7.2 vs Post 26.2±8.9 CG: Pre 25.6±13.1 vs Post 24.4±13.2 EG vs CG, p<0.01 ES=0.5
	HRQoL – SGRQ score	Symptoms score EG: Pre 75.6±16.0 vs Post 74.9±15.4 CG: Pre 75.3±16.5 vs Post 77.6±15.5 EG vs CG, p=0.44 ES=-0.2 Activity score EG: Pre 79.5±18.1 vs Post 69.6±19.4 CG: Pre 72.0±18.3 vs Post 76.2±15.4 EG vs CG, p=0.03 ES=-0.8 Impact score EG: Pre 49.4±18.5 vs Post 43.2±15.8 CG: Pre 43.5±20.7 vs Post 48.0±19.3 EG vs CG, p=0.10 ES=-0.6 Total score EG: Pre 64.1±16.9 vs Post 56.5±13.7 CG: Pre 57.4±16.8 vs Post 61.4±14.7 EG vs CG, p=0.02 ES=-0.7
	HRQoL – CRQ score	Dyspnoea score EG: Pre 2.3±0.8 vs Post 3.3±1.5 CG: Pre 2.3±1.1 vs Post 2.5±0.9 EG vs CG, p=0.03

							ES=0.7
							Fatigue score
							EG: Pre 3.1±1.1 vs Post 3.6±1.4
							CG: Pre 2.8±1.3 vs Post 3.1±1.3
							EG vs CG, p=0.34
							ES=0.2
							Emotion score
							EG: Pre 4.1±1.1 vs Post 4.8±1.4
							CG: Pre 3.6±1.2 vs Post 3.8±1.5
							EG vs CG, p=0.05
							ES=0.4
							Mastery score
							EG: Pre 3.7±1.4 vs Post 4.5±1.2
							CG: Pre 3.3±1.6 vs Post 4.0±1.6
							EG vs CG, p=0.32
							ES=0.1
						HRQoL – EuroQol score	Visual Analog Scale
							EG: Pre 58.0±18.0 vs Post 68.0±17.0
							CG: Pre 54.0±17.0 vs Post 61.0±15.0
							EG vs CG, p=0.29
							ES=0.2
						New exacerbations – No (%) of patients	At 3 months
							EG 8 (27.0%) vs CG 17 (57%), p=0.02
							OR=0.3, 95%CI (0.1-0.8)
						Hospital readmission – No (%) of patients	At 3 months
							EG 2 (7.0%) vs CG 10 (33.0%), p=0.02
							OR=0.2, 95%CI (0.0-0.7)
Troosters et al., 2010[43] Belgium	Patients admitted with AECOPD EG: n=17; 76.5%♂; 67.0±8.0yrs; FEV$_1$ 40.0±12.0%pred CG: n=19; 73.7%♂; 69.0±7.0yrs; FEV$_1$ 50.0±18.0%pred	Since admission Inpatient	EG: usual care plus quadriceps resistance training CG: usual care (i.e., medication, mucous secretion clearance techniques and breathing exercises)	EG: 7 days; 70% of 1RM; Progression: based on Borg scores of dyspnoea and fatigue CG: NS	EG: 1 session/day; 3 sets of 8 repetitions CG: NS	Exercise capacity – 6MWD (m)	Pre/post change: EG: 34.0 [14.0; 61.0], p=0.002 CG: 17.5 [-41.0; 62.0], p=0.59 EG vs CG, p=0.23
						Muscle strength – QMVC (%)	Pre/Post change: EG 9.7±16.0 vs CG -1.0±13.0, p=0.05 ES=0.7
						Length of hospitalization – No of days hospitalized	EG 8.0 [8.0; 9.0] vs CG 8.0 [8.0; 14.0], p>0.05

						Hospital readmission – No of patients	At 6 months EG 9 vs CG 8, p>0.05 OR=1.5
Ko et al., 2011 China[33]	Patients admitted with AECOPD EG: n=30; 100.0%♂; 73.5±7.7yrs; FEV$_1$ 46.2±19.7%pred CG: n=30; 96.7%♂; 73.8±6.4yrs; FEV$_1$ 40.8±17.5%pred	2-3weeks after discharge Outpatient	EG: PR program – treadmill, arm cycling, resistance training of upper and lower limbs; home exercise CG: usual care, i.e., instructions to have regular exercise at home but no training sessions	EG: 8 weeks (at least 20 sessions); 60-70% of VO$_2$máx CG: NS	EG: 3 sessions/week; 2h/session; home exercise for at least 20min/day CG: NS	Exercise capacity – 6MWD (m)	EG: Pre 298.2±85.2 vs Post 328.8±85.2 CG: Pre 296.7±97.1 vs Post 313.2±76.8 EG vs CG, p=0.15 ES=0.2
						Exercise capacity – VO$_2$máx (mL/kg/min)	EG: Pre 11.0±3.8 vs Post 12.7±4.6 CG: Pre 8.7±4.0 vs Post 11.1±5.0 EG vs CG, p=0.90 ES=-0.2
						Lung function – FEV$_1$ (%pred)	EG: Pre 46.2±19.7 vs Post 47.6±22.5 CG: Pre 40.8±17.5 vs Post 42.0±17.2 EG vs CG, p=0.24 ES=0.0
						Symptoms: Dyspnoea – modified Borg scale	EG: Pre 2.6±1.9 vs Post 2.4±2.4 CG: Pre 3.4±2.2 vs Post 3.5±2.9 EG vs CG, p=0.27 ES=-0.1
						Symptoms: Dyspnoea – mMRC score	EG: Pre 2.0±0.7 vs Post 2.9±0.9 CG: Pre 1.9±0.8 vs Post 3.1±0.8 EG vs CG, p=0.14 ES=-0.2
						HRQoL – SGRQ score	Symptoms score EG: Pre 66.7±16.5 vs Post 52.2±17.3 CG: Pre 68.9±23.6 vs Post 52.4±19.4 EG vs CG, p=0.70 ES=-0.1 Activity score EG: Pre 43.5±14.3 vs Post 50.5±27.7 CG: Pre 37.7±20.8 vs Post 63.1±26.7

						Outcome	Results
							EG vs CG, p=0.06 ES=-0.8 Impact score EG: Pre 53.4±12.9 vs Post 30.3±20.5 CG: Pre 50.4±19.3 vs Post 36.0±18.3 EG vs CG, p=0.02 ES=-0.5 Total score EG: Pre 61.1±15.8 vs Post 40.2±19.1 CG: Pre 57.2±16.9 vs Post 46.9±18.2 EG vs CG, p=0.01 ES=-0.6
						HRQoL – SF-36 score	Physical score EG: Pre 54.5±17.4 vs Post 69.3±18.6 CG: Pre 57.1±19.3 vs Post 61.4±19.2 EG vs CG, p=0.05 ES=0.6 Mental score EG: Pre 65.7±17.1 vs Post 73.2±18.2 CG: Pre 63.6±22.5 vs Post 72.4±23.5 EG vs CG, p=0.94 ES=-0.1
						New exacerbations – No of exacerbations	At 12 months EG 1.6±1.7 vs CG 1.8±2.7, p=0.76 IRR=0.9, 95%CI (0.6-1.3), p=0.62
						Hospital readmission – No of readmissions	At 12 months EG 1.0±1.2 vs CG 1.0±1.9, p=0.47 IRR=1.0, 95%CI (0.6-1.6), p=0.90
Cross et al. 2012[20] United	Patients hospitalized with AECOPD	Inpatient	EG: guidance to perform active cycle of breathing	At least 1 session EG: median 2, range [1-21] sessions	EG: median 11, range (1-41) min/session	Symptoms – Breathlessness, cough and sputum scale	EG: Pre 6.2±2.1 vs Post 5.6±3.0 CG: Pre 6.4±2.2 vs Post 5.7±2.8 EG vs CG, p=0.978

Kingdom	EG: n=258; 55.4%♂; 69.1±9.9yrs CG: n=264; 58.7%♂; 69.6±9.5yrs	technique, advice about positioning, manual chest therapy – percussion and vibration techniques CG: guidance to perform active cycle of breathing technique and advice about positioning	CG: NS	CG: NS		ES=0.0
					HRQoL – SGRQ score	Symptoms score EG: Pre 79.2±14.4 vs Post 68.4±23.1 CG: Pre 79.6±14.2 vs Post 68.4±23.0 EG vs CG, p=0.695 ES=0.0 Activity score EG: Pre 85.0±15.5 vs Post 82.5±18.8 CG: Pre 84.1±15.9 vs Post 80.9±19.7 EG vs CG, p=0.836 ES=0.0 Impact score EG: Pre 56.6±19.1 vs Post 51.5±22.6 CG: Pre 57.6±18.9 vs Post 51.6±22.5 EG vs CG, p=0.822 ES=0.0 Total score EG: Pre 68.9±14.7 vs Post 63.9±19.1 CG: Pre 69.1±14.8 vs Post 63.5±19.7 EG vs CG, p=0.753 ES=0.0
					HRQoL – EuroQol score	EG: Pre 0.5±0.3 vs Post 0.5±0.3 CG: Pre 0.4±0.4 vs Post 0.5±0.4 EG vs CG, p=0.886 ES=0.0 Visual Analog Scale score EG: Pre 45.0±21.0 vs Post 51.3±21.0 CG: Pre 46.6±21.4 vs Post 52.3±19.7 EG vs CG, p=0.297 ES=0.0
					Length of hospitalization – No	EG 16.0±16.5 vs CG 17.0±18.0, p=0.421

							of days hospitalized	ES=-0.1
Puhan et al., 2012[23] Switzerland	Patients with AECOPD EG$_1$: n=19; 63.2%♂; 67.5±9.8yrs; FEV$_1$ 42.7±13.5%pred EG$_2$: n=17; 52.9%♂; 66.5±6.2yrs; FEV$_1$ 46.3±15.9%pred	Inpatient and Outpatient EG$_1$: within 2 weeks EG$_2$: 6 months after randomization, at stable phase	PR program, i.e., exercise (endurance training, strength training and calisthenics) and education	12 weeks (18-36 sessions)	NS		Symptoms: Dyspnoea – mMRC score	Difference between EG$_1$ and EG$_2$ at 6months: 0.8, 95%CI (0.1-1.6), p=0.028
							HRQoL – CRQ score	Difference between EG$_1$ and EG$_2$ at 6months: Dyspnoea score -0.8, 95%CI (-2.0-0.3), p=0.14 Fatigue score -0.4, 95%CI (-1.3-0.4), p=0.29 Emotion score -0.2, 95%CI (-1.1-0.7), p=0.62 Mastery score -0.5, 95%CI (-1.5-0.4), p=0.28
							HRQoL – Feeling thermometer score	Difference between EG$_1$ and EG$_2$ at 6months: -9.7, 95%CI (-24.7-5.3), p=0.20
							New exacerbations – No of exacerbations	At 18 months EG$_1$ 2.6±3.0 vs EG$_2$ 2.8±3.4 IRR=1.0, 95%CI (0.5-1.9), p=0.91
Tang et al., 2012[40] Australia	Patients admitted with AECOPD EG$_1$: n=11; 45.5%♂; 68.0±10.1yrs; FEV$_1$ 45.1±18.6%pred EG$_2$: n=10; 20.0%♂; 73.6±10.0yrs; FEV$_1$ 46.1±18.3%pred CG: n=11; 54.5%♂; 78.0±8.8yrs; FEV$_1$ 46.8±20.4%pred	From the second day of admission Inpatient	EG$_1$: standard physiotherapy plus exercise – aerobic training (walking) and resistance training EG$_2$: standard physiotherapy plus exercise – aerobic training (walking) and resistance training CG: standard physiotherapy treatment, i.e., sputum clearance techniques, mobility assessments and functional training	Until discharge EG$_1$: 40% of 3-minute walk test, 40% of 1RM EG$_2$: 70% of 3-minute walk test, 70% of 1RM Progression: Aerobic training – ↑10% walking distance if change in Borg ≤2, Resistance training – stronger elastic band if the patient completed 2sets of the prescribed number of repetitions CG: NS	EG$_1$: 2 exercise sessions/day, 15min/session plus 1 standard physiotherapy session/day EG$_2$: 2 exercise sessions/day, 15min/session plus 1 standard physiotherapy session/day CG: 1 standard physiotherapy session/day	Exercise capacity – 3min walk test (m)	Pre/Post change: EG$_1$: 21.0, 95%CI (11.0-30.0), p=0.001 EG$_2$: 31.0, 95%CI (10.0-52.0), p=0.009 EG$_1$ vs CG: ES=0.4, 95%CI (-0.5-1.3) EG$_1$ vs EG$_2$: ES=0.6, 95%CI (-0.3-1.5) Favours EG$_1$
							Muscle strength – upper limb	EG$_1$ vs CG: ES=0.2, 95%CI (-0.7-1.0) EG$_1$ vs EG$_2$: ES=0.6, 95%CI (-0.3-1.5)
							Lung function – FEV$_1$ (%pred)	Pre/Post change: EG$_1$: 3.4, 95%CI (0.4-6.5), p=0.03 CG: 8.2, 95%CI (0.3-16.0), p=0.04
							Functionality –	EG$_2$: 6.9, 95%CI (0.1-13.7),

| | | | | | | Barthel index | p=0.05 CG: 5.7, 95%CI (0.2-11.2), p=0.04 |
| | | | | | | Length of hospitalization | ES=-0.3, 95%CI (-0.6-1.2) Favours EG₂ |

Study	Population	Setting/Timing	Intervention	Duration	Frequency	Outcome	Results
Chaplin et al., 2013[27] United Kingdom	Patients hospitalized with AECOPD EG$_1$: n=10; 50.0%♂; 65.4±6.2yrs; FEV$_1$ 39.8±26.7%pred EG$_2$: n=10; 50.0%♂; 70.6±7.8yrs; FEV$_1$ 43.1±20.0%pred	Inpatient EG$_1$: 7.4±4.3 days after admission EG$_2$: 5.5±4.2 days after admission	Walking plus neuromuscular electrical stimulation	Until discharge EG$_1$: 35Hz; 5.7±2.2 sessions EG$_2$: 50Hz; 8.7±4.6 sessions	1 session/day; 30 min/session	Exercise capacity – ESWT (sec)	EG$_1$: Pre 110.8±64.8 vs Post 219.8±110.7, p=0.035 EG$_2$: Pre 78.2±56.7 vs Post 223.8±110.7, p=0.001 Pre/Post change: EG$_1$ vs EG$_2$, p=0.46 ES=-0.4
						Muscle strength – QMVC (kg)	EG$_1$: Pre 24.5±10.0 vs Post 28.4±10.2, p=0.036 EG$_2$: Pre 22.6±10.7 vs Post 26.0±9.4, p=0.087 Pre/Post change: EG$_1$ vs EG$_2$, p=0.85 ES=0.0
Lainscak et al., 2013[57] Slovenia	Patients with AECOPD EG: n=118; 69.0%♂; 71.0±9.0yrs; FEV$_1$ 36.0±15.0%pred CG: n=135; 75.0%♂; 71.0±9.0yrs; FEV$_1$ 36.0±16.0%pred	Within 48h of admission EG: Inpatient and Home CG: Inpatient	EG: usual care plus discharge coordinator assessing patient situation and homecare needs CG: usual care, i.e., routine patient education, supervised inhaler use, respiratory physiotherapy	EG: 7-10 days; 1 home visit plus phone-calls CG: NS	EG: NS CG: NS	HRQoL – SGRQ score	Total score Pre/Post change: EG 1.1 [-9.5; 8.4] vs CG -0.1 [-11.3; 8.1], p=0.774 Improvement ≥ MCID: EG 24 (38.0%) vs CG 30 (42.0%), p=0.673
						Hospital readmission – No (%) of patients	At 6 months EG 17 (14.0%) vs CG 42 (31.0%), p=0.002 HR=0.4, 95%CI (0.2-0.8), p=0.002
						Mortality – No (%) of patients	At 6 months EG 11 (9.0%) vs CG 13 (10.0%), p=0.934 HR=0.5, 95%CI (0.2-1.3), p=0.164
Ali et al., 2014[24] India	Patients hospitalized with AECOPD EG: n=15; 73.3%♂;	Within 24h of clinical stabilization Inpatient for 3-4days EG: outpatient from	EG: self-management education, aerobic interval training	3 weeks EG: 75% of maximal workload achieved at CPET; 70-80% of	EG: 3 sessions/week; ≥40 min/session CG: NS	Exercise capacity – 6MWD (m)	EG: Pre 291.1±124.9 vs Post 363.5±85.6, p=0.0001 CG: Pre 325.3±89.2 vs Post 332.1±104.4, p=0.706

63.4±7.3yrs; FEV$_1$ 46.3±20.8%pred CG: n=15; 86.7%♂; 63.8±9.2yrs; FEV$_1$ 44.6±17.7%pred	the time of discharge CG: home from the time of discharge	(walking, biking), resistance training CG: usual care	1RM Progression: Aerobic training – ↓ rest periods; Resistance training – ↑5% load CG: NS		EG vs CG, p=0.013 ES=0.6
				Exercise capacity – VO$_2$peak (%pred)	EG: Pre 55.0±22.4 vs Post 65.4±22.0, p=0.02 CG: Pre 55.7±11.9 vs Post 57.1±11.8, p=0.70 EG vs CG, p=0.902 ES=0.5
				Lung function – FEV$_1$ (L)	EG: Pre 1.4±0.6 vs Post 1.5±0.6, p=0.02 CG: Pre 1.2±0.5 vs Post 1.2±0.5, p=0.781 EG vs CG, p=0.221 ES=0.2
				Lung function – FEV$_1$ (%pred)	EG: Pre 46.3±20.8 vs Post 51.5±27.9, p=0.04 CG: Pre 44.6±17.7 vs Post 40.8±14.8, p=0.10 EG vs CG, p=0.014 ES=0.4
				Lung function – FVC (L)	EG: Pre 2.4±0.6 vs Post 2.5±0.6, p=0.24 CG: Pre 2.3±0.6 vs Post 2.3±0.6, p=0.68 EG vs CG, p=0.467 ES=0.2
				Lung function – FVC (%pred)	EG: Pre 74.6±12.7 vs Post 78.1±18.9, p=0.36 CG: Pre 65.6±16.4 vs Post 64.8±16.1, p=0.74 EG vs CG, p=0.419 ES=0.3
				Lung function – FEV$_1$/FVC	EG: Pre 53.4±15.5 vs Post 57.5±16.7, p=0.04 CG: Pre 53.1±12.8 vs Post 50.4±13.6, p=0.256 EG vs CG, p=0.250 ES=0.5
				Vital signs & SpO$_2$ – SpO$_2$ (%)	EG: Pre 95.7±2.2 vs Post 96.5±2.0, p=0.04 CG: Pre 96.7±1.6 vs Post

		96.1±2.4, p=0.660 EG vs CG, p=0.18 ES=0.7
	Symptoms: Dyspnoea – modified Borg scale	EG: Pre 3.3±1.9 vs Post 2.9±1.7, p=0.39 CG: Pre 3.7±1.8 vs Post 2.9±1.6, p=0.119 EG vs CG, p=0.55 ES=0.2
	HRQoL – SF-36 score	Exercise EG: Pre 185.3±82.0 vs Post 242.0±65.8, p=0.014 CG: Pre 202.0±99.6 vs Post 216.0±96.6, p=0.16 EG vs CG, p=0.03 ES=0.5 Physical functioning EG: Pre 19.3±18.6 vs Post 82.7±9.7, p=0.0006 CG: Pre 18.7±14.1 vs Post 51.7±25.2, p=0.001 EG vs CG, p=0.005 ES=1.5 Physical health EG: Pre 0.0±0.0 vs Post 74.3±29.3, p=0.0005 CG: Pre 5.0±10.4 vs Post 30.0±41.4, p=0.048 EG vs CG, p=0.005 ES=1.9 Emotional problem EG: Pre 0.0±0.0 vs Post 84.2±21.1, p=0.0005 CG: Pre 15.4±21.2 vs Post 44.4±43.1, p=0.041 EG vs CG, p=0.008 ES=2.1 Energy/fatigue EG: Pre 38.0±8.0 vs Post 65.0±9.3, p=0.0005 CG: Pre 45.3±10.3 vs Post 53.3±12.9, p=0.076

							EG vs CG, p=0.001 ES=1.8 Emotional well-being EG: Pre 41.2±11.1 vs Post 63.3±9.1, p=0.001 CG: Pre 51.7±17.1 vs Post 61.3±16.6, p=0.010 EG vs CG, p=0.021 ES=0.9 Social functioning EG: Pre 47.3±15.8 vs Post 75.0±15.7, p=0.002 CG: Pre 49.7±16.4 vs Post 61.3±20.2, p=0.077 EG vs CG, p=0.049 ES=0.9 Pain EG: Pre 46.0±14.4 vs Post 84.2±13.2, p=0.0006 CG: Pre 53.2±13.2 vs Post 81.4±14.1, p=0.0009 EG vs CG, p=0.092 ES=0.7 General health EG: Pre 40.2±8.9 vs Post 54.0±12.3, p=0.008 CG: Pre 42.0±13.7 vs Post 53.5±13.0, p=0.008 EG vs CG, p=0.785 ES=0.2
Borges et al., 2014[26] Brazil	Patients hospitalized with AECOPD EG: n=15; 53.3%♂; 64.1±12.5yrs; FEV_1 41.7±13.6%pred CG: n=14; 71.4%♂; 67.8±9.0yrs; FEV_1 39.1±15.5%pred	Inpatient EG: Exercise from the 3rd day of hospitalization CG: NS	EG: chest physiotherapy, non-invasive ventilation (if needed), verbal instructions, whole-body resistance training CG: chest physiotherapy, non-invasive ventilation (if needed), verbal instructions	EG: ≥3 sessions (mean 5.6 sessions); ≥80% of 1RM; modified Borg scale <7; Progression: ↑weight based on symptoms and Borg CG: NS	EG: 1 session/day CG: 1 session/day	Exercise capacity – 6MWD (m) Muscle strength – upper limb (%)	Pre/Post change: EG 160.0±61.0 vs CG 11.0±83.0, p<0.05 ES=2.1 Shoulder abductors Pre/Post change: EG p<0.05 CG p>0.05 EG vs CG p<0.05 Shoulder flexors Pre/Post change: EG p>0.05 CG p>0.05

		EG vs CG p>0.05

		Elbow flexors Pre/Post change: EG p<0.05 CG p>0.05 EG vs CG p<0.05
Muscle strength – lower limb (%)		Hip flexors Pre/Post change: EG 17.1±5.4, p<0.05 CG <0.0, p<0.05 EG vs CG p<0.05 Knee extensors Pre/Post change: EG p>0.05 CG <0.0, p<0.05 EG vs CG p>0.05 Knee flexors Pre/Post change: EG 16.2±4.7, p<0.05 CG p>0.05 EG vs CG p<0.05
Lung function – FEV_1 (%pred)		EG: Pre 41.7±13.6 vs Post 44.6±14.1, p>0.05 CG: Pre 39.1±15.5 vs Post 42.3±14.4, p>0.05 EG vs CG, p>0.05 ES=0.0
Physical activity levels – % of patients		Inactive EG 87.0% vs CG 70.0%, p>0.05 OR=2.6
HRQoL – SGRQ score		Symptoms score Pre/Post change: EG 1.1±15.7 vs CG -4.8±5.9, p>0.05 ES=0.5 Activity score Pre/Post change: EG -14.3±13.7 vs CG -10.1±19.4, p>0.05 ES=-0.3 Impact score Pre/post change: -13.3±18.9 vs CG -3.1±37.4 ES=-0.3

							Total score Pre/Post change: -10.7±11.8 vs CG -2.4±19.6, p>0.05 ES=-0.5
						Length of hospitalization – No of days hospitalized	EG 8.0±2.2 vs CG 9.6±3.2, p>0.05 ES=-0.6
Deepak et al., 2014[28] India	Patients discharge from the hospital due to AECOPD EG: n=30; 93.3%♂; 58.4±6.8yrs; FEV_1 53.3±18.4%pred CG: n=30; 93.3%♂; 59.4±6.7yrs; FEV_1 46.7±14.8%pred	Within 2 weeks of hospital discharge; Outpatient	EG: conventional treatment plus PR program – aerobic training, resistance training, education, chest physiotherapy, breathing retraining techniques, psycho-social rehabilitation, nutrition CG: conventional treatment without PR	EG: 12 weeks CG: NS	EG: Exercise sessions up to 2h CG: NS	Exercise capacity – 6MWD (m)	EG: Pre 303.1±84.5 vs Post 340.5±86.2, p<0.001 improvement >MCID: 32.1% CG: Pre 288.3±96.1 vs 260.0±100.2, p<0.001 improvement >MCID: 0.0% EG vs CG, p<0.05 ES=0.7
						Symptoms: Dyspnoea – mMRC score	EG: Pre vs Post, p=0.013 CG: Pre vs Post, p=0.102
						HRQoL – SGRQ score	Symptoms score EG: Pre 62.0±14.0 vs Post 51.5±15.3 CG: Pre 56.7±16.8 vs Post 59.2±16.3 ES=-0.8 Activity score EG: Pre 72.8±16.6 vs Post 56.2±15.8 CG: Pre 69.2±20.8 vs Post 74.5±23.7 ES=-1.1 Impact score EG: Pre 40.3±14.3 vs Post 25.4±13.7 CG: Pre 50.6±21.8 vs Post 57.0±21.2 ES=-1.2 Total score EG: Pre 53.7±12.9 vs Post 39.0±12.9, p<0.001 improvement >MCID: 82.1% CG: Pre 57.3±18.5 vs Post 62.6±18.7, p=0.002

							improvement >MCID: 3.6% EG vs CG, p<0.05 ES=-1.2
Greulich et al., 2014[30] Germany	Patients hospitalized with AECOPD EG: n=20; 70.0%♂; 66.4±9.9yrs; FEV$_1$ 32.7±13.2%pred CG: n=20; 60.0%♂; 70.4±10.1yrs; FEV$_1$ 38.4±17.8%pred	Within the first 24h of hospitalization Inpatient	EG: standard physical therapy plus whole body vibration CG: standard physical therapy program, i.e., mobilization, passive movement and respiratory exercises	Until discharge EG: 12-26Hz CG: NS	EG: 26min/session CG: 20min/session	Exercise capacity – 6MWD (m)	EG: Pre 167.9±117.5 vs Post 263.5±124.1, p<0.001 CG: Pre 203.8±126.1 vs Post 198.7±101.4, p>0.05 Difference: EG 95.6±76.3 vs CG 6.1±81.7, p=0.007 ES=0.8
						Exercise capacity – Chair rising test (s)	EG: Pre 19.2±7.4 vs Post 17.0±7.0, p=0.02 CG: Pre 18.5±7.3 vs Post 28.5±32.1, p=0.14 Difference: EG -2.2±8.3 vs CG 4.0±9.2, p=0.003 ES=-0.7
						Lung function – FEV$_1$ (%pred)	EG: Pre 32.7±13.2 vs Post 36.7±13.9, p=0.04 CG: Pre 37.9±17.4 vs Post 43.2±22.8, p=0.03 EG vs CG, p>0.05 ES=-0.1
						Impact of disease – CAT score	EG: Pre 29.1±6.5 vs Post 25.1±5.7, p=0.02 CG: Pre 24.3±9.1 vs Post 22.7±7.2, p>0.05 Pre/Post change: EG vs CG, p=0.1 ES=-0.3
						HRQoL – SGRQ score	Total score EG: Pre 74.2±13.8 vs Post 67.8±18.5, p>0.05 CG: Pre 67.6±15.2 vs Post 69.7±18.0, p>0.05 Pre/Post change: EG vs CG, p=0.049 ES=-0.5
						Length of hospitalization – No of days	EG 8.6±3.8 vs CG 8.6±6.2, p=0.58

ES=0.0

Osadnik et al., 2014[22] Australia	Patients hospitalized with AECOPD EG: n=45; 62.2%♂; 69.5±9.8yrs; FEV_1 37.3±19.7%pred CG: n=45; 66.7%♂; 67.8±11.6yrs; FEV_1 44.4±20.2%pred	Within 48h of admission Inpatient	EG: usual care plus PEP therapy – active expiration via mask, huff and cough CG: usual care, i.e., bronchodilators, corticosteroids, antibiotics, oxygen, NIV and standard physical therapy (walking or equivalent lower limb exercise and cough)	Until discharge or 24h without sputum EG: 10-20cmH_2O CG: NS	Daily sessions Up to 30min of walking or equivalent lower limb exercise EG: 1 supervised session/day plus 2 unsupervised sessions/day; 20min/session of PEP therapy	Exercise capacity – 6MWD (m)	Discharge vs 8-week follow-up EG: 271.0±22.7 vs 324.0±24.2 CG: 297.0±23.2 vs 296.0±25.1 EG vs CG, p=0.052 ES=2.3
						Lung function – FEV_1 (%pred)	EG: Pre 37.3±19.7 vs Post 35.6±1.4 CG: Pre 44.4±20.2 vs Post 35.9±1.4 EG vs CG, p>0.05 ES=0.5
						Symptoms: Dyspnoea – mMRC score	Discharge vs 8-week follow-up EG: 2.8±0.2 vs 2.2±0.2 CG: 2.4±0.2 vs 2.6±0.2 EG vs CG, p=0.006 ES=-4.0
						Symptoms – Breathlessness, cough and sputum scale	EG: Pre 7.5±2.0 vs Post 5.2±0.4 CG: Pre 7.5±2.2 vs Post 5.0±0.4 EG vs CG, p>0.05 ES=0.1
						Disease severity – BODE index	Discharge vs 8-week follow-up EG: 5.8±0.4 vs 5.2±0.5 CG: 5.3±0.5 vs 5.1±0.5 EG vs CG, p>0.05 ES=-0.8
						HRQoL – SGRQ score	Symptoms score EG: Pre 66.0±17.9 vs Post 55.8±3.4 CG: Pre 68.5±19.0 vs Post 52.8±3.6 EG vs CG, p>0.05 ES=0.4 Activity score EG: Pre 56.3±27.0 vs Post 46.9±3.6 CG: Pre 53.0±26.9 vs Post 48.9±3.8 EG vs CG, p>0.05 ES=-0.3 Impact score

						Outcome	Results
							EG: Pre 41.4±18.3 vs Post 34.2±2.6 CG: Pre 40.8±20.4 vs Post 32.9±2.8 EG vs CG, p>0.05 ES=0.1 Total score EG: Pre 49.9±18.3 vs Post 41.6±2.6 CG: Pre 49.0±19.5 vs Post 40.8±2.8 EG vs CG, p>0.05 ES=0.0
						Length of hospitalization – No of days	EG 4.9 [3.0; 7.3] vs CG 4.3 [2.9; 7.6], p=0.591
						Hospital readmission – No of readmissions	At 6 months EG 1.0 [0.0; 1.8] vs CG 0.0 [0.0; 1.0], p=0.359
						Mortality – No (%) of patients	At 6 months EG 4 (9.0%) vs CG 6 (14.0%), p=0.484 OR=0.6
Song et al., 2014[39] Korea	Patients admitted with AECOPD EG: n=20; 55.0%♂; 66.6±11.1yrs; FEV$_1$ 57.1±10.0%pred CG: n=20; 75.0%♂; 68.1±6.5yrs; FEV$_1$ 60.4±20.9%pred	The day before discharge Inpatient, Outpatient and Home	EG: education, breathing exercise, stretch, walk, self-care support CG: usual care, i.e., education	EG: 2 months; 3 face-to-face sessions plus 2 phone-calls CG: NS	EG: face-to-face sessions – 135min/session; Phone calls – 15-30 min/call CG: NS	Exercise capacity – 6MWD (m)	EG: Pre 300.3±86.6 vs Post 333.5±79.2 CG: Pre 290.0±52.5 vs Post 312.7±72.1 EG vs CG p=0.423 ES=0.1
						Lung function – PEF (L/h)	EG: Pre 127.5±38.9 vs Post 132.7±7.1 CG: Pre 130.1±21.1 vs Post 134.3±15.7 EG vs CG, p=0.686 ES=0.0
						Vital signs & SpO$_2$ – Heart rate (bpm)	After 6MWT EG: Pre 97.9±0.7 vs Post 100.0±15.6 CG: Pre 86.7±6.8 vs Post 88.3±13.5 EG vs CG, p=0.887

							ES=0.0
						Vital signs & SpO₂ – SpO₂ (%)	After the 6MWT EG: Pre 87.3±7.6 vs Post 85.3±14.3 CG: Pre 91.6±8.2 vs Post 89.8±7.7 EG vs CG, p=0.785 ES=0.0
						HRQoL – SGRQ score	Symptoms score EG: Pre 47.2±20.5 vs Post 35.8±10.2 CG: Pre 57.5±21.5 vs Post 67.5±15.9 EG vs CG, p=0.003 ES=-1.2 Activity score EG: Pre 69.0±19.6 vs Post 61.3±28.6 CG: Pre 75.9±8.2 vs Post 74.6±8.2 EG vs CG, p=0.024 ES=-0.3 Impact score EG: Pre 57.1±19.1 vs Post 43.4±9.4 CG: Pre 65.1±21.0 vs Post 67.9±8.6 EG vs CG, p=0.034 ES=-1.1 Total score EG: Pre 52.9±18.2 vs Post 42.3±7.9 CG: Pre 62.1±17.4 vs Post 66.8±6.4 EG vs CG p=0.033 ES=-1.1
Valenza et al., 2014[55] Spain	Patients hospitalized with AECOPD EG: n=23; 100.0%♂; 76.0±5.5yrs	Since admission Inpatient	EG: control breathing program – relaxation exercises, pursed-lips breathing and active	EG: 10 days CG: NS	EG: 2 sessions/day; 30min/session CG: NA	Symptoms: Dyspnoea – mMRC score	EG: Pre 2.8±1.2 vs Post 0.6±0.9, p=0.004 CG: Pre 2.7±0.4 vs Post 3.6±5.7, p>0.05 EG vs CG, p<0.001

CG: n=23; 100.0%♂; 74.4±6.7yrs		expiration CG: usual care, i.e., standard medical treatment		ES=-1.0
			Symptoms: Anxiety – HADS score	EG: Pre 13.8±4.0 vs Post 2.1±6.8, p<0.05 CG: Pre 14.0±4.9 vs Post 8.1±8.3, p<0.05 EG vs CG, p<0.001 ES=-0.9
			Symptoms: Depression – HADS score	EG: Pre 9.6±2.1 vs Post 3.6±5.7, p<0.05 CG: Pre 8.9±4.0 vs Post 7.0±3.1, p>0.05 EG vs CG, p<0.001 ES=-1.0
			HRQoL – EuroQol	Mobility score EG: Pre 2.1±0.9 vs Post 0.7±0.7, p<0.05 CG: Pre 2.0±0.6 vs Post 1.8±1.0, p>0.05 EG vs CG, p<0.001 ES=-1.5 Self-care score EG: Pre 1.9±1.0 vs Post 0.3±0.5, p<0.05 CG: Pre 2.2±0.8 vs Post 2.0±0.7, p>0.05 EG vs CG, p<0.001 ES=-1.8 Activity score EG: Pre 2.3±0.8 vs Post 0.1±0.7, p<0.05 CG: Pre 2.5±0.5 vs Post 2.3±0.6, p<0.005 EG vs CG, p<0.005 ES=-3.0 Pain score EG: Pre 2.0±0.5 vs Post 0.4±0.7, p<0.05 CG: Pre 2.1±0.9 vs Post 2.0±0.4, p>0.05 EG vs CG, p<0.001 ES=-2.3 Anxiety/depression score

						EG: Pre 2.4±0.7 vs Post 1.3±1.4, p<0.05 CG: Pre 2.5±0.8 vs Post 2.3±0.9, p>0.05 EG vs CG, p<0.001 ES=-0.9
He et al., 2015[31] China	Patients admitted with AECOPD EG: n=66; 90.9%♂; 69.2±1.5yrs; FEV$_1$ 38.0±3.0%pred CG: n=28; 82.1%♂; 73.9±1.8yrs; FEV$_1$ 39.0±5.1%pred	From the second day of admission Inpatient	EG: PR program – exercise training (stretches, endurance and strength training), relaxation, breathing retraining (breathing control and pursed lips) and education CG: usual care	Until discharge EG: dyspnoea between 3-5 on modified Borg scale; Treadmill – 60% of peak work rate in 6MWT; Progression: ↑walk time; ↑number of sets at resistance training CG: NS	EG: 2 sessions/day; 30min/session CG: NS	Exercise capacity – 6MWD (m)	EG: Pre 242.0±15.0 vs Post 291.0±14.6, p<0.001 CG: Pre 263.9±20.8 vs Post 273.7±20.0, p=0.620 ES=2.3
						Functionality – Activity of Daily Living Dyspnoea scale score	EG: Pre 40.4±2.2 vs Post 60.7±2.3, p<0.001 CG: 53.3±2.2 vs Post 58.1±2.4, p=0.339 ES=6.8
						Vital signs & SpO$_2$ – SpO$_2$ (%)	At rest EG: Pre 95.8±0.7 vs Post 97.1±0.2, p=0.001 CG: Pre 96.7±0.5 vs Post 96.3±0.4, p=0.183 ES=3.4 During exercise EG: Pre 90.7±1.6 vs Post 91.5±1.2, p=0.329 CG: Pre 90.9±1.5 vs Post 92.3±1.1, p=0.500 ES=-0.4
						Symptoms: Dyspnoea – modified Borg scale	At rest EG: Pre 0.4±0.1 vs Post 0.1±0.1, p=0.013 CG: Pre 0.5±0.2 vs Post 0.3±0.2, p=0.033 ES=-0.7 During exercise EG: Pre 3.5±2.5 vs Post 1.8±0.3, p=0.008 CG: Pre 3.1±0.4 vs Post 2.2±0.4, p=0.108 ES=-0.5
						Symptoms: Dyspnoea	EG: Pre 3.1±0.9 vs Post 2.2±0.1,

						– mMRC score	p<0.001 CG: Pre 2.9±0.7 vs Post 2.7±0.7, p=0.165 ES=-1.1
						Impact of disease – CAT score	EG: Pre 24.3±1.1 vs Post 13.1±1.1, p<0.001 CG: Pre 22.6±1.4 vs Post 17.8±1.6, p<0.001 ES=-5.1
						Disease severity – BODE index	EG: Pre 5.6±0.2 vs Post 3.8±0.2, p<0.001 CG: Pre 5.6±0.3 vs Post 4.9±0.3, p=0.310 ES=-4.7
						HRQoL – CRQ score	EG: Pre 98.9±3.5 vs Post 123.4±2.1, p<0.001 CG: Pre 116.2±2.9 vs Post 123.6±2.6, p=0.702 ES=6.1
Liao et al., 2015[34] Taiwan	Patients with AECOPD EG: n=30; 53.3%♂; 68.0 [44.0; 89.0]yrs; PEF 140.0 [50.0; 240.0]L/s CG: n=31; 67.7%♂; 70.0 [52.0; 91.0]yrs; PEF 140.0 [60.0; 300.0]L/s	Inpatient	EG: usual care, health education, respiratory rehabilitation exercise training – disease awareness, sputum clearance (postural drainage and vibrating sputum clearance devices), pursed lips breathing, upper limb exercise with deep breathing and walking CG: usual care and health education	EG: 4 days CG: NS	EG: 2 sessions/day; 1h/session CG: NS	Exercise capacity – 6MWD (m)	EG: Pre 214.9±86.1 vs Post 259.8±74.9, p<0.001 CG: 191.4±73.5 vs Post 187.9±72.0, p=0.839 EG vs CG, p<0.001 ES=0.6
						Symptoms: Dyspnoea – modified Borg scale	EG: Pre 4.5±2.5 vs Post 1.1±1.2, p<0.001 CG: Pre 4.1±3.3 vs Post 3.7±3.3, p=0.087 EG vs CG, p<0.001 ES=-1.1
						Symptoms: Cough – Visual Analog Scale	EG: Pre 5.3±2.6 vs Post 2.1±1.1, p<0.001 CG: Pre 5.3±3.4 vs Post 4.7±3.2, p=0.116 EG vs CG, p<0.001 ES=-1.0
						Symptoms: Sputum – Difficulty to expectorate in No (%)	Easy EG: Pre 22 (73.3%) vs Post 27.0 (90.0%)

Study / Country	Population	Timing	Intervention	Frequency	Sets	Outcome	Results
						of patients	CG: Pre 18 (58.9%) vs Post 21.0 (67.7%) Difficult EG: Pre 8 (26.7%) vs Post 3 (10.0%) CG: Pre 13 (41.9%) vs Post 10 (32.3%) EG vs CG, p=0.034 Fisher's = 4.43
Benzo et al., 2016[18] United States of America	Patients admitted with AECOPD EG: n=108; 42.6%♂; 67.9±9.8yrs; FEV$_1$ 40.5±17.1%pred CG: n=107; 47.7%♂; 68.1±9.2yrs; FEV$_1$ 40.3±17.2%pred	At discharge EG: 1 session inpatient; home from the time of discharge CG: NS	EG: health coaching intervention – written action plan, self-management concept, aerobic training, upper extremities exercises, pursed lip breathing CG: usual care	EG: at least 2 sessions plus phone calls CG: NS	NS	HRQoL – CRQ score	Emotional score Change at 6 months: EG 0.5±1.0 vs CG 0.1±1.0, p=0.004 ES=0.4 Improvement >MCID: EG 29.9% vs CG 14.1%,p=0.018 Physical score Change at 6 months: EG 0.3±0.9 vs CG 0.0±1.0 ES=0.4 Improvement >MCID: EG 26.0% vs CG 12.8%, p=0.038
						Hospital readmission – % of patients	At 1month OR=0.1, 95%CI (0.0-0.8), p=0.028 At 3 months OR=0.4, 95%CI (0.2-0.9), p=0.032 At 6 months: OR=0.4, 95%CI (0.2-0.9), p=0.034 At 12 months: OR=0.6, 95%CI (0.3-1.2), p=0.150
						Mortality – No (%) of patients	At 12 months EG 10 (9.3%) vs CG 12 (11.3%), p=0.620 OR=0.8
Eastwood et al., 2016[49] New Zealand	Patients admitted with AECOPD with sputum production EG$_1$: n=4;	Within 24h of admission Inpatient	EG$_1$: active cycle of breathing technique, written instruction and education	1 day 1 supervised session plus 2 unsupervised sessions	3 sets/session	Lung function – FEV$_1$ (L)	EG$_1$: Pre 1.1±0.2 Post day 1 1.2±0.3 Post day 2 1.0±0.1 EG$_2$: Pre 0.8±0.3

73.0±9.0yrs; FEV_1 39.0±7.3%pred EG₂: n=4; 74.0±16.0yrs; FEV_1 34.0±13.9%pred EG₃: n=3; 78.0±11.0yrs; FEV_1 34.0±11.8%pred	EG₂: bubble-PEP, written instruction and education EG₃: theraPEP, written instruction and education	EG₂: $10cmH_2O$		Post day 1 0.8±0.2 Post day 2 0.8±0.3 EG₃: Pre 1.0±0.6 Post day 1 1.0±0.5 Post day 2 1.2±0.7 EG₁ vs EG₂ vs EG₃, p>0.05 EG₁ vs EG₂: ES=-0.4 EG₁ vs EG₃: ES=-0.6 EG₂ vs EG₃: ES=-0.4
			Lung function – FVC (L)	EG₁: Pre 2.5±0.9 Post day 1 2.2±0.9 Post day 2 2.0±0.5 EG₂: Pre 1.6±0.2 Post day 1 1.7±0.3 Post day 2 1.4±0.6 EG₃: Pre 2.1±1.0 Post day 1 1.9±0.9 Post day 2 2.3±1.1 EG₁ vs EG₂ vs EG₃, p>0.05 EG₁ vs EG₂: ES=-0.5 EG₁ vs EG₃: ES=-0.7 EG₂ vs EG₃: ES=-0.5
			Lung function – FEV_1/FVC	EG₁: Pre 55.5±8.1 Post day 1 58.3±17.1 Post day 2 51.5±11.1 EG₂: Pre 47.3±17.9 Post day 1 48.0±20.8 Post day 2 48.5±14.9 EG₃: Pre 46.5±13.2 Post day 1 55.0±16.1 Post day 2 51.0±14.2 EG₁ vs EG₂ vs EG₃, p>0.05 EG₁ vs EG₂: ES=-0.4 EG₁ vs EG₃: ES=-0.7 EG₂ vs EG₃: ES=-0.2
			Symptoms – Breathlessness, cough and sputum scale	EG₁: Post session 1 4.3±1.0 Post session 2 4.8±2.9 Post session 3 5.3±1.2 Post day 2 6.8±1.5 EG₂: Post session 1 6.5±3.5 Post session 2 6.5±3.5 Post session 3 5.0

		Post day 2 5.0±1.4
		EG$_3$: Post session 1 7.0±4.8
		Post session 2 6.0±3.4
		Post session 3 5.5±1.3
		Post day 2 6.0±4.1
		EG$_1$ vs EG$_2$ vs EG$_3$, p>0.05
		EG$_1$ vs EG$_2$: ES=1.8
		EG$_1$ vs EG$_3$: ES=1.1
		EG$_2$ vs EG$_3$: ES=-0.1
Symptoms – Difficulty to expectorate in Visual Analog Scale (mm)		EG$_1$: Post session 1 21.5±19.3
		Post session 2 20.3±15.7
		Post session 3 56.3±40.1
		Post day 2 32.3±34.4
		EG$_2$: Post session 1 57.0±39.6
		Post session 2 67.0±39.6
		Post session 3 76.0
		Post day 2 58.0±52.3
		EG$_3$: Post session 1 59.0±40.8
		Post session 2 70.8±44.4
		Post session 3 49.0±33.9
		Post day 2 47.5±44.3
		EG$_1$ vs EG$_2$ vs EG$_3$, p>0.05
		EG$_1$ vs EG$_2$: ES=0.2
		EG$_1$ vs EG$_3$: ES=0.6
		EG$_2$ vs EG$_3$: ES=0.3
Impact of disease – CAT score		EG$_1$: Pre 23.8±2.8
		Post day 1 22.5±5.0
		Post day 2 21.3±5.5
		EG$_2$: Pre 20.7±15.4
		Post day 1 29.3±3.5
		Post day 2 27.0±8.5
		EG$_3$: Pre 26.3±6.4
		Post day 1 24.8±6.9
		Post day 2 21.8±8.1
		EG$_1$ vs EG$_2$ vs EG$_3$, p>0.05
		EG$_1$ vs EG$_2$: ES=-0.9
		EG$_1$ vs EG$_3$: ES=0.3
		EG$_2$ vs EG$_3$: ES=0.9
Length of hospitalization – No of hours hospitalized		EG$_1$: 3.5 [2.5; 7.0]
		EG$_2$: 7.0 [1.0; 7.0]
		EG$_3$: 4.0 [3.0; 5.5]

							EG$_1$ vs EG$_2$ vs EG$_3$, p>0.05
						Patients' satisfaction – No of patients	Treatment worthily Agree: EG$_1$ 1 vs EG$_2$ 2 vs EG$_3$ 2 Neutral: EG$_1$ 1 vs EG$_2$ 0 vs EG$_3$ 0 Disagree: EG$_1$ 2 vs EG$_2$ 0 vs EG$_3$ 2 EG$_1$ vs EG$_2$: OR=0.3 EG$_1$ vs EG$_3$: OR=0.2 EG$_2$ vs EG$_3$: OR=0.5
Johnson-Warrington et al., 2016[21] United Kingdom	Patients admitted with AECOPD EG: n=39; 38.5%♂; 67.6±8.5yrs; FEV$_1$ 40.5±15.7%pred CG: n=39; 33.3%♂; 68.3±7.7yrs; FEV$_1$ 42.5±11.7%pred	EG: Home CG: NS	EG: SPACE for COPD – education and home-based exercise program (walking, resistance training of upper and lower limbs) CG: usual care (without PR)	EG: 10 weeks; 1 session plus 6 phone-calls CG: NS	EG: face-to-face session – 30-45min; aerobic training – daily; resistance training – 3 times/week CG: NS	Exercise capacity – ISWT (m)	Pre/Post change: EG: 45.0 [0.0; 70.0], p<0.01 CG: 30.0 [0.0; 95.0], p<0.01 EG vs CG, p=0.769 Pre/Post change ≥ MCID: EG 11.0 (50.0%) vs CG 9.0 (42.9%), p=0.648
						Exercise capacity – ESWT (s)	Pre/Post change: EG: 178.5 [-3.8; 443.5], p<0.01 CG: 155.0 [21.0; 618.5], p<0.01 EG vs CG, p=0.951 Pre/Post change ≥ MCID: EG 10.0 (50.0%) vs CG 8.0 (47.1%), p=0.863
						Symptoms: Anxiety – HADS score	Pre/Post change: EG: -0.3±3.5, p>0.05 CG: 0.3±3.5, p>0.05 EG vs CG, p=0.563 ES=-0.2 Pre/Post change ≥ MCID: EG 9.0 (34.6%) vs CG 5.0 (17.2%), p=0.151
						Symptoms: Depression – HADS score	Pre/Post change: EG: 0.5±3.3, p>0.05 CG: 0.8±4.3, p>0.05 EG vs CG, p=0.833 ES=-0.1 Pre/Post change ≥ MCID: EG 8.0 (30.8%) vs CG 10.0 (34.5%), p=0.775
						HRQoL – CRQ score	Dyspnoea score Pre/Post change:

		EG: 1.1±1.3, p<0.01 CG: 0.5±1.2, p<0.05 EG vs CG, p=0.062 ES=0.5 Pre/Post change ≥ MCID: EG 19.0 (63.3%) vs CG 11.0 (36.7%), p=0.039 **Fatigue score** Pre/Post change: EG: 1.0±1.2, p<0.01 CG: 0.6±1.2, p<0.01 EG vs CG, p=0.245 ES=0.3 Pre/Post change ≥ MCID: EG 23.0 (76.7%) vs CG 17.0 (56.7%), p=0.104 **Emotion score** Pre/Post change: EG: 1.1±1.5, p<0.01 CG: 0.4±1.6, p=0.216 EG vs CG, p=0.077 ES=0.5 Pre/Post change ≥ MCID: EG 19.0 (63.3%) vs CG 17.0 (56.7%), p=0.605 **Mastery score** Pre/Post change: EG: 1.4±1.5, p<0.01 CG: 0.9±1.5, p<0.01 EG vs CG, p=0.181 ES=0.3 Pre/Post change ≥ MCID: EG 22.0 (73.3%) vs CG 22.0 (73.3%), p=1.000
Hospital readmission – No (%) of patients	At 3 months EG 12 (30.8%) vs CG 13 (33.3%), p=0.808 OR=0.9	
Mortality – No of patients	At 3 months EG 0 vs CG 3, p=0.077 OR=0.1	
Disease knowledge –	Pre/Post change:	

						Measure	Results
						Bristol COPD Knowledge Questionnaire	EG: 3.9±7.1, p<0.05 CG: 2.1±7.2, p>0.05 EG vs CG, p=0.364 ES=0.3
						Self-efficacy – Pulmonary Rehabilitation Adapted Index of Self-Efficacy	Pre/Post change: EG: 0.5±9.5, p>0.05 CG: 2.3±8.7, p>0.05 EG vs CG, p=0.465 ES=-0.2
Torres-Sánchez et al., 2016[42] Spain	Patients hospitalized with AECOPD EG: n=24; 100.0%♂; 72.4±8.9yrs; FEV_1 39.0%pred CG: n=25; 92.0%♂; 73.7±7.1yrs; FEV_1 41.0%pred	Inpatient	EG: usual care plus multimodal intervention program – breathing exercises, active range of motion exercises and muscle strengthening CG: usual care	Until discharge EG: ≥7 sessions CG: NS	EG: 2 sessions/day, 30-45min/session CG: NS	Exercise capacity – 2min step in place test (No of repetitions)	Pre/Post change: EG: 17.6±6.7, p<0.05 CG: 4.9±16.1, p>0.05 EG vs CG, p=0.013 ES=1.0
						Muscle strength – Handgrip (N)	Pre/Post change: EG: 23.3±52.0, p<0.05 CG: 0.3±3.7, p>0.05 EG vs CG, p=0.376 ES=0.6
						Muscle strength – Lower limb (N)	Pre/Post change: EG: 16.5±9.7, p<0.05 CG: -31.0±44.1, p<0.05 EG vs CG, p=0.038 ES=1.5
						Lung function – FEV_1 (L)	Pre/Post change: EG: 0.6±0.9, p<0.05 CG: 0.3±0.6, p<0.05 EG vs CG, p=0.123 ES=0.4
						Lung function – FEV_1 (%pred)	Pre/Post change: EG: 7.0±0.8, p<0.05 CG: 9.0±0.5, p<0.05 EG vs CG, p=0.264 ES=-3.0
						Vital signs and SpO_2 – SpO_2 (%)	Pre/Post change: EG: 5.8±4.6, p<0.001 CG: -4.7±5.2, p<0.001 EG vs CG, p=0.412 ES=2.1
						Symptoms: Dyspnoea	Pre/Post change:

– modified Borg scale	EG: 2.2±2.6, p<0.05 CG: 3.6±2.2, p<0.05 EG vs CG, p=0.785 ES=-0.6
Symptoms: Anxiety – HADS score	Pre/Post change: EG: 3.8±3.6, p<0.05 CG: 0.8±2.9, p>0.05 EG vs CG, p=0.218 ES=0.9
Symptoms: Depression – HADS score	Pre/Post change: EG: 4.2±2.5, p<0.05 CG: 0.2±3.5, p>0.05 EG vs CG, p=0.001 ES=1.3
HRQoL – EuroQol score	Mobility score Pre/Post change: EG: 0.7±0.7, p<0.05 CG: 0.3±0.7, p>0.05 EG vs CG, p=0.124 ES=0.6 Self-care score Pre/Post change: EG: 0.6±0.8, p<0.05 CG: 0.3±0.5, p<0.05 EG vs CG, p=0.007 ES=0.5 Usual activities score Pre/Post change: EG: 0.7±0.8, p<0.05 CG: 0.3±0.7, p>0.05 EG vs CG, p=0.001 ES=0.5 Pain/discomfort score Pre/Post change: EG: 0.5±0.9, p<0.05 CG: 0.5±0.7, p<0.05 EG vs CG, p=0.381 ES=0.0 Anxiety/depression score Pre/Post change: EG: 0.6±0.7, p<0.05 CG: 0.5±0.5, p<0.05

							EG vs CG, p=0.029 ES=0.2 Visual Analog Scale Pre/Post change: EG: 17.5±23.5, p<0.05 CG: 9.0±20.9, p>0.05 EG vs CG, p=0.040 ES=0.4
						Length of hospitalization – No of days	EG 8.7±2.0 vs CG 8.8±2.0, p=0.801 ES=-0.1
Basri et al., 2017[50] Pakistan	Patients hospitalized with AECOPD EG: n=30; 60.0%♂; 55.0±3.8yrs; PEF 1.4 CG: n=30; 43.3%♂; 53.0±3.7yrs; PEF 1.4	Inpatient	EG: standard medical treatment plus active cycle breathing technique CG: standard medical treatment, i.e., pharmacological treatment, smoking cessation and lifestyle modification	2 weeks	EG: 30-40min/session CG: NS	Lung function – PEF	Median Pre/Post change: EG -5.4±4.0 vs CG 2.0±25.9, p<0.05 ES=-0.4
						Vital signs and SpO$_2$ – SpO$_2$ (%)	Median Pre/Post change: EG -3.6±3.2 vs CG -3.7±3.1, p<0.05 ES=0.0
						Symptoms: Dyspnoea – Visual Analog Scale	Median Pre/Post change: EG 4.8±1.1 vs CG 0.4±0.6, p<0.05 ES=4.8
Torres-Sánchez et al., 2017[41] Spain	Patients admitted with AECOPD EG: n=29; 75.9%♂; 75.7±6.3yrs; FEV$_1$ 42.4±10.6%pred CG: n=29; 69.0%♂; 72.1±8.2yrs; FEV$_1$ 39.1±12.1%pred	From the second day of admission Inpatient	EG: usual care plus exercise using a pedal exerciser CG: usual care, i.e., systemic steroids, inhaled bronchodilators and oxygen	Until discharge EG: dyspnoea and fatigue levels ≤6 on modified Borg scale Progression: ↑time, velocity and resistance CG: NA	NS	Exercise capacity – 30-seconds sit-to-stand test (No of repetitions)	EG: Pre 8.8±4.6 vs Post 13.7±4.8, p<0.05 CG: Pre 9.7±6.2 vs Post 9.1±3.2, p>0.05 Median Pre/Post change: EG 5.0 vs CG -0.5, p=0.409 ES=1.1
						Muscle strength – Lower limb (N)	EG: Pre 103.6±11.4 vs Post 114.0±37.3, p<0.05 CG: Pre 101.5±13.5 vs Post 86.3±40.2, p<0.05 Median Pre/Post change: EG 10.5 vs CG -15.0, p=0.028 ES=0.9
						Functionality – One-leg stance test (s)	Right EG: Pre 4.1±6.8 vs Post 11.6±10.7, p<0.05 CG: Pre 5.2±7.5 vs Post 2.5±7.5, p<0.05

							Median Pre/Post change: EG 6.5 vs CG -2.5, p=0.013 ES=1.2 Left EG: Pre 2.9±5.2 vs Post 9.5±10.6, p<0.05 CG: Pre 3.6±5.0 vs Post 0.7±7.1, p>0.05 Median Pre/Post change: EG 7.0 vs CG -3.0, p=0.059 ES=1.3
						Physical activity levels – No of steps/day	EG: Pre 432.5±318.0 vs Post 1604.8±274.0 CG: Pre 513.0±264.0 vs Post 941.8±367.0 Median Pre/Post change: EG 1162.5 vs CG 451.0, p<0.001 ES=2.4
						Length of hospitalization – No of days hospitalized	EG 12.5±1.9 vs CG 10.4±2.5, p=0.354 ES=0.9
Janaudis-Ferreira et al., 2018[59] Canada	Patients admitted with AECOPD EG: n=15; 53.3%♂; 71.0±11.0yrs; FEV_1 45.3±7.4%pred CG: n=13; 30.8%♂; 74.0±10.0yrs; FEV_1 34.7±3.8%pred	Within 7 days of hospital admission Inpatient and Home	EG: usual care plus education CG: usual care, i.e., pharmacological treatment and oxygen therapy as required	EG: 2 weeks, 2 sessions CG: NS	EG: 30min/session CG: NA	Disease knowledge – Bristol COPD Knowledge Questionnaire	Median Pre/Post change: EG 8.0±5.1 vs CG 3.4±4.9, p=0.018 ES=0.9
						Disease knowledge – Lung Information Needs Questionnaire	Median Pre/Post change: EG -2.4±2.7 vs CG -1.6±2.3, p=0.41 ES=-0.3
						Patients' satisfaction – No of patients	The intervention should be delivered to every patient: 14 There is nothing to improve: 13
Lopez-Lopez et al., 2018[53] Spain	Patients admitted with AECOPD EG_1: n=14; 78.6%♂; 62.9±12.4yrs; FEV_1 33.7±5.6%pred EG_2: n=13; 77.0%♂; 64.0±10.5yrs; FEV_1	24 after admission Inpatient	EG_1: standard medical treatment plus breathing retraining, cycling combined with neuromuscular stimulation, and active-assisted	Until discharge EG_1: 50Hz EG_2: 50Hz	EG_1: 1 session/day; 45min/session EG_2: 1 session/day; 45min/session	Functionality – 5-times sit-to-stand (s)	EG_1: Pre 37.4±17.8 vs Post 30.1±16.5, p=0.003 EG_2: Pre 39.2±23.1 vs Post 23.1±15.8, p=0.002 CG: Pre 35.8±25.1 vs Post 32.1±24.6, p=0.335 EG_1 vs CG, p<0.05; ES=-0.2 EG_2 vs CG, p<0.05; ES=-0.6

26.2±8.0%pred CG: n=12; 83.4%♂; 64.3±8.5yrs; FEV₁ 30.3±6.8%pred	stretches EG₂: standard medical treatment plus breathing retraining, lower limb elastic band resistance exercises combined with neuromuscular stimulation, and active-assisted stretches CG: standard medical treatment, i.e., antibiotics, corticosteroids, inhaled bronchodilators and oxygen therapy	EG_1 vs EG_2, $p<0.05$; ES=0.5
		Functionality – London Chest Activity of Daily Living score

Self-care score
EG_1: Pre 9.4±2.3 vs Post 7.2±1.8, p=0.074
EG_2: Pre 9.4±2.3 vs Post 7.5±1.4, p=0.104
CG: Pre 8.2±2.0 vs Post 8.0±1.7, p=0.635
EG_1 vs CG, $p<0.05$; ES=-1.1
EG_2 vs CG, $p<0.05$; ES=-1.0
EG_1 vs EG_2, $p>0.05$; ES=-0.2
Domestic score
EG_1: Pre 16.2±6.8 vs Post 13.2±6.6, p=0.021
EG_2: Pre 16.5±6.8 vs Post 12.0±7.5, p=0.037
CG: Pre 15.0±7.1 vs Post 14.8±8.3, p=0.506
EG_1 vs CG, $p<0.05$; ES=-0.4
EG_2 vs CG, $p<0.05$; ES=-0.6
EG_1 vs EG_2, $p>0.05$; ES=0.2
Physical score
EG_1: Pre 5.1±1.7 vs Post 2.8±1.5, p=0.002
EG_2: Pre 5.4±1.6 vs Post 3.4±1.1, p=0.061
CG: Pre 4.9±1.8 vs Post 3.7±2.0, p=0.471
EG_1 vs CG, $p<0.05$; ES=-0.6
EG_2 vs CG, $p<0.05$; ES=-0.5
EG_1 vs EG_2, $p>0.05$; ES=-0.2
Leisure score
EG_1: Pre 5.7±1.5 vs Post 3.5±1.6, p=0.017
EG_2: Pre 5.3±1.9 vs Post 3.7±1.2, p=0.012
CG: Pre 5.5±1.7 vs Post 5.8±0.9, p=0.325
EG_1 vs CG, $p<0.05$; ES=-1.7
EG_2 vs CG, $p<0.05$: ES=-1.3
EG_1 vs EG_2, $p>0.05$; ES=-0.4
Total score

							EG$_1$: Pre 35.1±7.0 vs Post 23.7±10.0, p=0.001 EG$_2$: Pre 32.2±9.5 vs Post 19.9±12.2, p=0.013 CG: Pre 30.1±10.8 vs Post 28.1±13.6, p=0.759 EG$_1$ vs CG, p<0.05; ES=-0.9 EG$_2$ vs CG, p<0.05; ES=-0.9 EG$_1$ vs EG$_2$, p>0.05; ES=0.1
						Symptoms: Dyspnoea – modified Borg scale	EG$_1$: Pre 4.9±3.1 vs Post 2.8±1.2, p=0.003 EG$_2$: Pre 5.2±3.5 vs Post 1.8±0.7, p=0.031 CG: Pre 5.2±3.5 vs Post 3.2±3.0, p=0.024 EG$_1$ vs CG, p>0.05; ES=0.0 EG$_2$ vs CG, p>0.05; ES=-0.5 EG$_1$ vs EG$_2$, p>0.05; ES=0.5
						Symptoms: Fatigue – Fatigue Severity Scale score	EG$_1$: Pre 5.8±3.1 vs Post 3.8±2.6, p=0.001 EG$_2$: Pre 6.2±2.4 vs Post 2.1±1.2, p<0.001 CG: Pre 6.2±2.4 vs Post 4.2±3.2, p=0.147 EG$_1$ vs CG, p<0.05; ES=0.0 EG$_2$ vs CG, p<0.05; ES=-0.9 EG$_1$ vs EG$_2$, p<0.05; ES=0.9
						Length of hospitalization – No of days hospitalized	EG$_1$ 9.0±2.5 vs EG$_2$ 10.5±4.3 vs CG 9.2±3.2, p>0.05 EG$_1$ vs CG: ES=-0.1 EG$_2$ vs CG: ES=0.3 EG$_1$ vs EG$_2$: ES=-0.4
Torres-Sanchez et al., 2018[51] Spain	Patients admitted with AECOPD EG$_1$: n=30; 93.3%♂; 75.1±8.7yrs; FEV$_1$ 31.3±5.3%pred EG$_2$: n=30; 86.7%♂; 70.1±10.6yrs; FEV$_1$ 30.1±8.3%pred	Inpatient	EG$_1$: standard medical treatment plus relaxation exercises, pursed lips breathing, active expiration and active range of motion exercises EG$_2$: standard	Until discharge EG$_2$: Progression: ↑time, velocity and resistance	EG$_1$: 1 session/day; 30-40min/session EG$_2$: 1 session/day; 30-40min/session	Lung function – FEV$_1$ (%pred)	EG$_1$: Pre 31.3±5.3 vs Post 38.6±10.3, p=0.002 EG$_2$: Pre 30.1±8.3 vs Post 37.5±13.1, p=0.033 CG: Pre 30.4±10.8 vs Post 35.1±14.5, p=0.025 EG$_1$ vs CG, p>0.05; ES=0.2 EG$_2$ vs CG, p>0.05; ES=0.2 EG$_1$ vs EG$_2$, p>0.05; ES=0.0

CG: n=30; 80.0%♂; 71.1±9.4yrs; FEV_1 30.4±10.8%pred	medical treatment plus upper and lower limbs resistance training CG: standard medical treatment, i.e., antibiotics, corticosteroids, inhaled bronchodilators and oxygen therapy	Symptoms: Dyspnoea – modified Borg scale	EG_1: Pre 4.9±2.0 vs Post 2.7±3.5, p=0.007 EG_2: Pre 5.8±2.8 vs Post 1.7±1.9, p<0.001 CG: Pre 6.1±2.9 vs Post 3.9±3.4, p<0.001 EG_1 vs CG, p>0.05; ES=0.0 EG_2 vs CG, p<0.05; ES=-0.7 EG_1 vs EG_2, p>0.05; ES=0.7
		HRQoL – EuroQol score	Mobility score EG_1: Pre 1.9±0.6 vs Post 1.2±0.4, p<0.001 EG_2: Pre 1.6±0.4 vs Post 1.2±0.5, p<0.001 CG: Pre 1.9±0.5 vs Post 1.5±0.6, p=0.003 EG_1 vs CG, p<0.05; ES=-0.6 EG_2 vs CG, p<0.05; ES=-0.2 EG_1 vs EG_2, p>0.05; ES=-0.5 Self-care score EG_1: Pre 1.7±0.7 vs Post 1.0±0.0, p<0.001 EG_2: Pre 1.9±0.8 vs Post 1.1±0.7, p=0.011 CG: Pre 1.9±0.7 vs Post 1.5±0.8, p=0.001 EG_1 vs CG, p<0.05; ES=-0.4 EG_2 vs CG, p<0.05; ES=-0.5 EG_1 vs EG_2, p>0.05; ES=0.2 Usual activity score EG_1: Pre 1.9±0.9 vs Post 1.4±0.8, p=0.030 EG_2: Pre 2.1±0.8 vs Post 1.0±0.8, p<0.001 CG: Pre 2.3±0.7 vs Post 1.9±0.8, p=0.018 EG_1 vs CG, p<0.05; ES=-0.2 EG_2 vs CG, p<0.05; ES=-0.9 EG_1 vs EG_2, p<0.05; ES=0.7 Pain/discomfort score EG_1: Pre 1.5±0.6 vs Post 1.2±0.4, p=0.073

EG$_2$: Pre 1.3±0.5 vs Post 1.3±0.5, p=1.000
CG: Pre 1.8±0.5 vs Post 1.4±0.5, p<0.001
EG$_1$ vs CG, p>0.05; ES=0.3
EG$_2$ vs CG, p>0.05; ES=0.8
EG$_1$ vs EG$_2$, p>0.05; ES=-0.5
Anxiety/depression score
EG$_1$: Pre 2.8±0.7 vs Post 1.8±0.8, p<0.001
EG$_2$: Pre 2.1±0.5 vs Post 0.8±0.6, p<0.001
CG: Pre 2.0±0.8 vs Post 2.1±0.8, p=1.000
EG$_1$ vs CG, p>0.05; ES=-1.3
EG$_2$ vs CG, p<0.05; ES=-2.1
EG$_1$ vs EG$_2$, p>0.05; ES=0.5
Index
EG$_1$: Pre 0.4±0.4 vs Post 0.8±0.2, p<0.001
EG$_2$: Pre 0.4±0.5 vs Post 0.9±0.4, p<0.001
CG: Pre 0.3±0.4 vs Post 0.6±0.4, p<0.001
EG$_1$ vs CG, p>0.05; ES=0.2
EG$_2$ vs CG, p<0.05; ES=0.4
EG$_1$ vs EG$_2$, p>0.05; ES=-0.2
Visual Analog Scale
EG$_1$: Pre 50.0±9.8 vs Post 78.3±15.8, p<0.001
EG$_2$: Pre 43.8±1.5 vs Post 72.9±14.3, p<0.001
CG: Pre 42.5±17.0 vs Post 56.2±21.6, p<0.001
EG$_1$ vs CG, p<0.05; ES=0.9
EG$_2$ vs CG, p<0.05; ES=1.0
EG$_1$ vs EG$_2$, p>0.05; ES=-0.1

	Length of hospitalization – No of days hospitalized	EG$_1$ 9.0±2.5 vs EG$_2$ 10.5±4.3 vs CG 9.2±3.2, p=0.27 EG$_1$ vs CG: ES=-0.1 EG$_2$ vs CG: ES=0.3 EG$_1$ vs EG$_2$: ES=-0.4

Aboumatar et al., 2019[58] United States of America	Patients admitted with AECOPD EG: n=120; 40.0%♂; 63.9±9.6yrs; FEV_1 33.3±16.0%pred CG: n=120; 36.7%♂; 66.0±10.0yrs; FEV_1 35.8±14.2%pred	Inpatient and Home	EG: transition support by a COPD nurse, individual care plan, self-management support CG: usual transition support by a general transition coach	EG: 3 months; mean 6, interquartile range [4-8] sessions CG: 30 days	EG: face-to-face sessions plus phone calls CG: NS	HRQoL – SGRQ score	Symptoms score EG: Pre 65.7±21.3 vs 6 months 64.9±23.0 CG: Pre 67.3±20.2 vs 6 months 60.2±23.0 ES=0.3 Activity score EG: Pre 79.8±21.2 vs 6 months 80.3±21.4 CG: Pre 82.6±17.4 vs 6 months 78.4±21.8 ES=0.2 Impact score EG: Pre 51.1±21.9 vs 6 months 56.4±26.0 CG: Pre 51.5±20.8 vs 6 months 50.6±24.7 ES=0.3 Total score EG: Pre 62.3±18.8 vs 6 months 65.1±22.0 CG: Pre 63.6±17.4 vs 6 months 60.9±21.0 ES=0.3
						COPD-related events – No of events	At 6 months EG 1.4, 95%CI (1.0-1.8) vs CG 0.7, 95%CI (0.5-1.0) Difference between EG and CG: 0.7, 95%CI (0.2-1.2), p=0.004
						Mortality – No (%) of patients	At 6 months EG 8 (6.7%) vs CG 7 (5.8%), p>0.99 OR=1.2
Lopez-Lopez et al., 2019a[46] Spain	Patients admitted with AECOPD EG_1: n=22; 71.2±11.5yrs; FEV_1 36.7±16.8%pred EG_2: n=22; 72.6±7.4yrs; FEV_1	From the second day of admission Inpatient	EG_1: standard medical treatment plus neuromuscular stimulation and lower limbs exercises EG_2: standard medical treatment	Until discharge (5–7 sessions)	1 session/day	Muscle strength – handgrip (N)	EG_1: Pre 270.7±104.5 vs Post 257.3±64.5, p=0.552 EG_2: Pre 275.7±88.5 vs Post 262.7±47.3, p=0.305 CG: Pre 265.6±98.4 vs Post 246.1±85.7, p=0.487 EG_1 vs CG, p>0.05; ES=0.1 EG_2 vs CG, p>0.05; ES=0.1

38.8±17.9%pred CG: n=22; 71.4±9.9yrs; FEV_1 34.5±19.6%pred	plus neuromuscular stimulation and lower limbs exercises plus self-management programme CG: standard medical treatment, i.e., bronchodilators, inhaled corticosteroids and antibiotics	Lung function – FEV_1 (%pred)	EG$_1$ vs EG$_2$, p>0.05; ES=0.0 EG$_1$: Pre 36.6±16.8 vs Post 43.0±12.5, p=0.003 EG$_2$: Pre 38.8±17.9 vs Post 45.7±17.9, p=0.001 CG: Pre 34.5±19.6 vs Post 41.3±21.1, p=0.029 EG$_1$ vs CG, p>0.05; ES=0.0 EG$_2$ vs CG, p>0.05; ES=0.0 EG$_1$ vs EG$_2$, p>0.05; ES=0.0
		Functionality – 5-times sit-to-stand (s)	EG$_1$: Pre 38.9±18.8 vs Post 29.1±20.5, p=0.033 EG$_2$: Pre 36.1±19.7 vs Post 24.5±6.8, p=0.025 CG: Pre 39.1±20.5 vs Post 31.3±11.2, p=0.195 EG$_1$ vs CG, p<0.05; ES=-0.1 EG$_2$ vs CG, p<0.05; ES=-0.2 EG$_1$ vs EG$_2$, p>0.05; ES=0.1
		Functionality – London Chest Activity of Daily Living score	Personal care score EG$_1$: Pre 10.0±4.6 vs Post 6.1±4.6, p=0.003 EG$_2$: Pre 9.9±4.9 vs Post 6.1±4.5, p=0.004 CG: Pre 11.1±4.5 vs Post 9.1±3.8, p=0.025 EG$_1$ vs CG, p<0.05; ES=-0.4 EG$_2$ vs CG, p>0.05; ES=-0.4 EG$_1$ vs EG$_2$, p>0.05; ES=0.0 Domestic activities score EG$_1$: Pre 7.9±9.8 vs Post 6.0±6.5, p=0.011 EG$_2$: Pre 6.9±9.8 vs Post 5.1±6.1, p=0.032 CG: Pre 7.9±11.5 vs Post 9.4±7.9, p=0.258 EG$_1$ vs CG, p<0.05; ES=-0.4 EG$_2$ vs CG, p>0.05; ES=-0.4 EG$_1$ vs EG$_2$, p>0.05; ES=0.0 Physical activities score EG$_1$: Pre 5.6±1.9 vs Post 3.8±1.2, p=0.004

EG$_2$: Pre 5.7±1.7 vs Post 3.9±1.5, p<0.001
CG: Pre 6.4±2.7 vs Post 5.3±3.5, p=0.354
EG$_1$ vs CG, p<0.05; ES=-0.3
EG$_2$ vs CG, p>0.05; ES=-0.3
EG$_1$ vs EG$_2$, p>0.05; ES=0.1
Leisure activities score
EG$_1$: Pre 6.7±2.7 vs Post 4.3±2.4, p=0.001
EG$_2$: Pre 6.0±2.4 vs Post 3.6±2.3, p=0.001
CG: Pre 7.0±2.9 vs Post 5.9±2.7, p=0.035
EG$_1$ vs CG, p>0.05, ES=-0.5
EG$_2$ vs CG, p>0.05; ES=-0.5
EG$_1$ vs EG$_2$, p>0.05; ES=0.0
Total score
EG$_1$: Pre 30.1±12.9 vs Post 20.9±9.5, p=0.002
EG$_2$: Pre 28.2±12.2 vs Post 18.7±9.7, p<0.001
CG: Pre 32.4±14.3 vs Post 28.7±11.6, p=0.985
EG$_1$ vs CG, p<0.05; ES=-0.4
EG$_2$ vs CG, p>0.05; ES=-0.5
EG$_1$ vs EG$_2$, p>0.05; ES=0.0

Functionality – Functional Independence Measure score	Motor score
	EG$_1$: Pre 85.8±10.5 vs Post 91.6±11.2, p=0.012
	EG$_2$: Pre 79.7±12.1 vs Post 85.3±11.8, p=0.017
	CG: Pre 81.2±13.8 vs Post 77.8±2.5, p=0.321
	EG$_1$ vs CG, p<0.05; ES=0.9
	EG$_2$ vs CG, p>0.05; ES=0.8
	EG$_1$ vs EG$_2$, p>0.05; ES=0.0
	Cognitive score
	EG$_1$: Pre 34.5±1.3 vs Post 35.2±0.7, p=0.036
	EG$_2$: Pre 33.6±2.2 vs Post 34.0±0.7, p=0.042

		CG: Pre 33.5±5.0 vs Post 34.1±1.9, p=0.604
		EG_1 vs CG, p>0.05; ES=0.0
		EG_2 vs CG, p>0.05; ES=-0.1
		EG_1 vs EG_2, p>0.05; ES=0.2
		Total score
		EG_1: Pre 120.3±11.1 vs Post 126.6±12.2, p=0.041
		EG_2: Pre 113.3±13.3 vs Post 119.3±12.4, p=0.023
		CG: Pre 114.6±17.0 vs Post 111.8±3.0, p=0.459
		EG_1 vs CG, p<0.05; ES=0.8
		EG_2 vs CG, p>0.05; ES=0.7
		EG_1 vs EG_2, p>0.05; ES=0.0
	Symptoms: Dyspnoea – modified Borg scale	EG_1: Pre 5.1±2.6 vs Post 2.6±2.3, p=0.006
		EG_2: Pre 4.2±3.0 vs Post 2.9±3.4, p=0.004
		CG: Pre 5.9±2.6 vs Post 3.1±2.3, p=0.011
		EG_1 vs CG, p>0.05; ES=0.1
		EG_2 vs CG, p>0.05; ES=0.5
		EG_1 vs EG_2, p>0.05, ES=-0.4
	HRQoL – EuroQol score	**Mobility score**
		EG_1: Pre 1.8±0.6 vs Post 1.4±0.6, p=0.001
		EG_2: Pre 1.9±0.6 vs Post 1.2±0.6, p=0.008
		CG: Pre 1.9±0.5 vs Post 1.6±0.6, p=0.073
		EG_1 vs CG, p<0.05; ES=-0.2
		EG_2 vs CG, p<0.05; ES=-0.5
		EG_1 vs EG_2, p<0.05; ES=0.3
		Personal care score
		EG_1: Pre 2.0±0.7 vs Post 1.4±0.7, p<0.001
		EG_2: Pre 1.9±0.8 vs Post 1.2±0.8, p<0.001
		CG: Pre 2.0±0.8 vs Post 1.7±0.8, p=0.101
		EG_1 vs CG, p<0.05; ES=-0.4

EG_2 vs CG, $p<0.05$; ES=-0.6
EG_1 vs EG_2, $p>0.05$; ES=0.1
Daily activities score
EG_1: Pre 2.2 ± 0.8 vs Post 1.6 ± 1.0, $p=0.184$
EG_2: Pre 2.0 ± 0.8 vs Post 1.3 ± 0.8, $p<0.001$
CG: Pre 2.2 ± 0.8 vs Post 1.8 ± 0.9, $p=0.062$
EG_1 vs CG, $p<0.05$; ES=-0.3
EG_2 vs CG, $p<0.05$; ES=-0.4
EG_1 vs EG_2, $p>0.05$; ES=0.1
Pain score
EG_1: Pre 1.6 ± 0.8 vs Post 1.3 ± 0.7, $p=0.208$
EG_2: Pre 1.7 ± 0.7 vs Post 1.3 ± 0.7, $p=0.027$
CG: Pre 1.7 ± 0.8 vs Post 1.2 ± 0.8, $p=0.056$
EG_1 vs CG, $p>0.05$; ES=0.2
EG_2 vs CG, $p>0.05$; ES=0.1
EG_1 vs EG_2, $p>0.05$; ES=0.1
Anxiety/depression score
EG_1: Pre 1.8 ± 0.8 vs Post 1.4 ± 0.9, $p=0.326$
EG_2: Pre 1.9 ± 0.8 vs Post 1.2 ± 0.7, $p<0.001$
CG: Pre 1.9 ± 0.8 vs Post 1.5 ± 0.8, $p=0.007$
EG_1 vs CG, $p>0.05$; ES=0.0
EG_2 vs CG, $p<0.05$; ES=-0.4
EG_1 vs EG_2, $p>0.05$; ES=0.4
Visual Analog Scale
EG_1: Pre 54.9 ± 16.6 vs Post 65.8 ± 17.8, $p=0.395$
EG_2: Pre 46.6 ± 20.7 vs Post 70.6 ± 23.78, $p<0.001$
CG: Pre 46.5 ± 21.3 vs Post 56.1 ± 22.7, $p<0.001$
EG_1 vs CG, $p>0.05$; ES=0.1
EG_2 vs CG, $p<0.05$; ES=0.6
EG_1 vs EG_2, $p<0.05$; ES=-0.7

						Length of hospitalization – No of days hospitalized	EG$_1$ 9.5±3.0 vs EG$_2$ 9.5±5.7 vs CG 9.5±4.2, p>0.05 EG$_1$ vs CG: ES=0.0 EG$_2$ vs CG: ES=0.0 EG$_1$ vs EG$_2$: ES=0.0
Lopez-Lopez et al., 2019b[45] Spain	Patients admitted with AECOPD EG$_1$: n=15; 71.7±5.6yrs; FEV$_1$ 36.3±8.3%pred EG$_2$: n=17; 68.6±8.4yrs; FEV$_1$ 34.2±26.4%pred CG: n=16; 68.5±8.9yrs; FEV$_1$ 31.7±6.1%pred	From the second day of admission Inpatient	EG$_1$: standard medical and pharmacological treatment plus cycling combined with neuromuscular stimulation EG$_2$: standard medical and pharmacological treatment plus cycling combined with neuromuscular stimulation CG: standard medical and pharmacological treatment, i.e., systemic steroids, inhaled bronchodilators, oxygen, oral prednisolone and antibiotics	Until discharge (5–7 sessions) EG$_1$: 50Hz EG$_2$: 50Hz	EG$_1$: 1 session/day; 30min/session EG$_2$: 2 sessions/day; 30min/session	Muscle strength – knee extension (N)	Pre/Post change EG$_1$: 24.0±3.0, p<0.05 EG$_2$: 59.4±94.6, p<0.001 CG: 9.5±21.6, p>0.05 EG$_1$ vs CG, p<0.05; ES=0.9 EG$_2$ vs CG, p<0.05; ES=0.7 EG$_1$ vs EG$_2$, p<0.05; ES=-0.5
						Functionality – 5-times sit-to-stand (s)	Pre/Post change EG$_1$: 19.6±11.9, p<0.05 EG$_2$: 23.5±3.5, p<0.05 CG: 16.5±13.9, p<0.05 EG$_1$ vs CG, p<0.05; ES=0.2 EG$_2$ vs CG, p<0.05; ES=0.7 EG$_1$ vs EG$_2$, p>0.05; ES=-0.5
						Symptoms: Dyspnoea – modified Borg scale	Pre/Post change At rest EG$_1$: 1.2±3.0, p=0.041 EG$_2$: 2.4±2.7, p<0.05 CG: 1.3±3.2, p=0.037 EG$_1$ vs CG, p>0.05; ES=0.0 EG$_2$ vs CG, p<0.05; ES=0.4 EG$_1$ vs EG$_2$, p<0.05; ES=-0.4 Post exercise EG$_1$: 0.3±1.6, p<0.05 EG$_2$: 1.2±3.1, p<0.05 CG: 0.8±2.3, p<0.05 EG$_1$ vs CG, p>0.05; ES=-0.2 EG$_2$ vs CG, p<0.05; ES=0.2 EG$_1$ vs EG$_2$, p<0.05; ES=-0.4
						Symptoms: Perceived exertion – Visual Analog Scale	Pre/Post change At rest EG$_1$: 3.1±4.6, p<0.05 EG$_2$: 3.2±4.5, p<0.05 CG: 2.4±2.4, p>0.05 EG$_1$ vs CG, p<0.05; ES=0.2 EG$_2$ vs CG, p<0.05; ES=0.2

Study	Population	Setting	Intervention	Protocol	Sessions	Outcome	Results
							EG$_1$ vs EG$_2$, p>0.05; ES=0.0 Post exercise EG$_1$: 1.2±1.4, p>0.05 EG$_2$: 3.0±1.9, p<0.05 CG: 1.2±1.8, p>0.05 EG$_1$ vs CG, p<0.05; ES=0.0 EG$_2$ vs CG, p<0.05; ES=1.0 EG$_1$ vs EG$_2$, p<0.05; ES=-1.1
						Length of hospitalization – No of days hospitalized	EG$_1$ 8.9±1.7 vs EG$_2$ 9.5±2.0 vs CG 9.7±2.4, p=0.345 EG$_1$ vs CG: ES=-0.4 EG$_2$ vs CG: ES=0.0 EG$_1$ vs EG$_2$: ES=-0.3
Kjærgaard et al., 2020[44] Denmark	Patients admitted with AECOPD EG$_1$: n=70; 41.0%♂; 72.7±9.4yrs; FEV$_1$ 40.2±15.0%pred EG$_2$: n=61; 41.0%♂; 74.4±7.8yrs; FEV$_1$ 44.1±17.0%pred	Outpatient or Community or Home EG$_1$: within 2 weeks of discharge EG$_2$: 2 months after discharge, at stable phase	PR program, i.e., exercise (aerobic and strength training) and education	7 weeks; Aerobic training – dyspnoea 4-7 on modified Borg scale or 85% of VO$_{2max}$ in ISWT; Strength training 40-80% of 1RM	Exercise sessions – 2 sessions/week; 1.5h/session; Education sessions – 1 session/week; 1h/session	Exercise capacity – ISWT (m)	EG$_1$: Pre 193.3±8.8; change at 2 months 72.4±9.5, p<0.001; change at 6 months 68.1±10.0, p<0.001 EG$_2$: Pre 192.7±9.0; change at 2 months 38.5±9.5, p<0.001; change at 6 months 50.4±10.0, p<0.001 Change at 2 months: EG$_1$ vs EG$_2$ 33.9, 95%CI (4.2-63.7), p=0.02; ES=3.6 Change at 6 months: EG$_1$ vs EG$_2$ 17.7, 95%CI (-13.3-48.7), p=0.26; ES=1.8
						Exercise capacity – ESWT (s)	EG$_1$: Pre 239.0±42.4; change at 2 months 399.0±45.5, p<0.001; change at 6 months 332.0±47.8, p<0.001 EG$_2$: Pre 253.0±44.1; change at 2 months 259.0±45.6, p<0.001; change at 6 months 307.0±47.6, p<0.001 Change at 2 months: EG$_1$ vs EG$_2$ 140.0, 95%CI (-2.0-282.8), p=0.05; ES=3.1 Change at 6 months: EG$_1$ vs EG$_2$ 25.0, 95%CI (-123.4-171.9), p=0.75; ES=0.5

	Impact of disease – CAT score	EG$_1$: Pre 15.8±0.5; change at 2 months -3.5±0.6, p<0.01; change at 6 months -3.6±0.6, p<0.01 EG$_2$: Pre 15.2±0.6; change at 2 months -2.1±0.6, p<0.01; change at 6 months -2.2±0.6, p<0.01 Change at 2 months: EG$_1$ vs EG$_2$ -1.4, 95%CI (-3.4-0.6), p=0.17; ES=-2.3 Change at 6 months: EG$_1$ vs EG$_2$ -1.4, 95%CI (-3.5-0.6), p=0.18; ES=-2.3
	Hospital readmission – No of readmissions	At 12 months – all EG$_1$ 128 vs EG$_2$ 90 IRR 1.0 95%CI (0.7-1.7), p=0.85 At 12 months – respiratory related EG$_1$ 86 vs EG$_2$ 65 OR 0.7 95%CI (0.3-1.4), p=0.31
	Mortality – No (%) of patients	At 12 months EG$_1$ 9 (13%) vs EG$_2$ 6 (10%) OR 1.1 95%CI (0.3-3.4), p=0.92

Data are presented as mean±standard deviation or median [interquartile range], unless otherwise stated.

Legend: 1RM, one-repetition maximum; 6MWD, 6-minute walk distance; 6MWT, 6-minute walk test; AECOPD, acute exacerbation of chronic obstructive pulmonary disease; bpm, beats per minute; CAT, COPD assessment test; CG, control group; CPET, cardiopulmonary exercise test; cpm, cycles per minute; CRQ, chronic respiratory questionnaire; EG, experimental group; ES, effect size; ESWT, endurance shuttle walk test; FEV$_1$, forced expiratory volume in one second; FVC, forced vital capacity; HADS, hospital anxiety and depression scale; HR, Hazard ratio; HRQoL, health-related quality of life; IRR, incident rate ratio; ISWT, incremental shuttle walk test; MCID, minimal clinical important difference; MRC, medical research council dyspnoea questionnaire; mMRC, modified medical research council dyspnoea questionnaire; NA, not applicable; NS, not stated; OR, odds ratio; PEF, peak expiratory flow; PEP, positive expiratory pressure; PR, pulmonary rehabilitation; QMVC, quadriceps maximal voluntary contraction; RICU, respiratory intensive care unit; SF-12, the 12-item short form health survey; SF-36, the 36-item short form health survey; SGRQ, St. George's respiratory questionnaire; SpO$_2$, peripheral oxygen saturation; VO$_2$, oxygen uptake.