

Table S1. Search strategy for MEDLINE.

1. Lung Diseases/
2. Lung Diseases, Obstructive/
3. Lung Diseases, Interstitial
4. exp Pulmonary Fibrosis
5. exp Cystic Fibrosis
6. exp Asthma
7. exp Bronchiectasis
8. Hypertension Pulmonary/
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. exp Exercise Test
11. Walking Test/
12. step NEAR/2 test
13. sit NEAR/2 stand
14. gait near/2 stand
15. 10 or 11 or 12 or 13 or 14
16. 9 and 15
17. Limit 16 to English language

Table S2. Included studies for 6-minute walk test

Study	Exercise test	Study design	Number of participants (n)	Diagnosis	Severity FEV <sub>1</sub> % predicted mean (SD)	Location of test	Monitoring
Brooks 2003 <sup>1</sup>	6MWT	RXT	18	COPD	42 (8)	Outdoors vs hospital	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Holland 2015 <sup>2</sup>	6MWT	RXT	19	COPD	54 (19)	Home vs hospital	SpO <sub>2</sub> , pulse, blood pressure, dyspnoea, fatigue
Juen 2014 <sup>3</sup>	6MWT	Validation	30	Asthma, COPD or both	68 (23)	Centre / remote	SpO <sub>2</sub> , pulse, distance (remote via app)
Juen 2015 <sup>4</sup>	6MWT	Validation	28	COPD	NS	Centre / remote	SpO <sub>2</sub> , pulse, distance (remote via app)
Zainuldin <sup>5</sup>	6MWT	Repeated measures	39	COPD	58 (19)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue, cardiometabolic parameters

COPD – chronic obstructive pulmonary disease, FEV<sub>1</sub> – forced expiratory volume in 1 second, NS – not stated, RXT – randomised crossover trial, SpO<sub>2</sub> – oxyhaemoglobin saturation.

Table 3. Included studies for sit-to-stand tests

Study	Exercise test	Study design	Number of participants (n)	Diagnosis	Disease severity (FEV1% pred unless stated, mean and SD)	Location of test	Monitoring
Aguilaniu 2014 <sup>6</sup>	Semi-paced 3-minute STS	Repeatability	40	COPD	54 (16)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Benton 2009 <sup>7</sup>	30secSTS	XS	40	COPD	36.7(2.6)	Centre	NS
Bernabeu-Mora 2016 <sup>8</sup>	5STS	XS	137	COPD	50.2 (16.5)	Centre	NS
Berry 2018 <sup>9</sup>	5STS	Pre-post	11	COPD	61.1(5.9)	Centre	NS
Bossenbroek 2009 <sup>10</sup>	30secSTS	XS	15	COPD lung transplant candidates	20(5.2)	Centre	NS.
Briand 2018 <sup>11</sup>	1minSTS	Reliability and validity, retrospective	107	iILD	DLCO 51 (19)%pred	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Butcher 2012 <sup>12</sup>	30secSTS	RXT	13	COPD	48 (14)	Centre	NS
Chen 2018 <sup>13</sup>	5STS	RCT	47	COPD	54.70 (24.29)	Centre	NS

Crook 2017a <sup>14</sup>	1minSTS	Multi-centre validity study	255	COPD	53 (15)	Centre	NS
Crook 2017b <sup>15</sup>	1minSTS	Prospective Cohort	371	COPD	Median 58 (IQR 44n to 68)	Centre	NS
Gloeckl 2012 <sup>16</sup>	5STaS	RCT	82	COPD	39 (11)	Centre	NS
Gonzalez-Saiz 2017 <sup>17</sup>	5STS	RCT	40	PAH	Mean PAP 47 (15)mmHg	Centre	NS
Grosbois 2015 <sup>18,19</sup> Coquart 2017	10STS	Retrospective	211 298	COPD	41.5(17.41)	Home	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Gruet 2016 <sup>20</sup>	1minSTS	Validity and reliability	25	CF	59.5 (range 21.8-112.0)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Hansen 2018 <sup>21</sup>	30secSTS	Reliability	50	COPD	32 (9)	Centre	NS
Jones 2013 <sup>22</sup>	5STS	Pre-post	475	COPD	47.6 (SD NS)	Centre	NS
Kongsgaard 2004 <sup>23</sup>	30secSTS	RCT	18	COPD	46 (3.4)	Centre	NS
Levesque 2019 <sup>24</sup>	5STS, 1minSTS, 3minSTS	Multicentre observational	116	COPD	47.5 (95% CI 44.5 – 50.4)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue

Li 2018 <sup>25</sup>	30secSTS	RCT	36	COPD	Control group: 64% GOLD stage II 36% GOLD stage III	Centre	NS
Mancuso 2007 <sup>26</sup>	5STS	XS	258	Asthma	90 (18)	Centre	Dyspnoea, leg exertion
Mazzarin 2018 <sup>27</sup>	1minSTS	XS	39	COPD on LTOT	Median 29%pred	Home	NS
Morita 2018 <sup>28</sup>	5STS, 30secSTS, 1minSTS	XS	23	COPD	68 (8)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, blood pressure, fatigue
Neves 2018 <sup>29</sup>	5STS	Controlled trial	20	COPD	58.4 (21.4)	Centre	NS
Oliveira 2018 <sup>30</sup>	5STS	Longitudinal	44	Exacerbation COPD	51.11 (20.27)	Centre and Home	NS
Ozalevli 2007 <sup>31</sup>	1minSTS	XS	53	COPD	46 (9)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, blood pressure, fatigue
Puhan 2013 <sup>32</sup>	1minSTS	Prospective cohort	374	COPD	46 (9)	Primary care	NS
Radtke 2016 <sup>33</sup>	1minSTS	Pre-post	14	CF	Median 53 (43, 56.5)	Centre	SpO <sub>2</sub> , heart rate (polar), cardiometabolic parameters (Metamax 3B), dyspnoea, perceived exertion

Radtke 2017 <sup>34</sup>	1minSTS	XS	15	CF	Median 49 (IQR 34,55)	Centre	SpO <sub>2</sub> , heart rate (polar), cardiometabolic parameters (Metamax 3B), dyspnoea, perceived exertion
Regueiro 2009 <sup>35</sup>	2minSTS	XS	10	COPD	46 (8)	Centre	SpO <sub>2</sub> , pulse, blood pressure, dyspnoea
Reychler 2018 <sup>36</sup>	1minSTS	RXT	42	COPD	47 (18)	Centre	SpO <sub>2</sub> , heart rate (polar), blood pressure, dyspnoea, lower limb fatigue
Rietschel 2008 <sup>37</sup>	5STS	Pre-post	10	CF	49 (29)	Centre	NS
Rosenbek 2015 <sup>38</sup>	5STS	Pre-post	37	COPD	27 (13)	Home	NS
Sheppard 2019 <sup>39</sup>	30secSTS	XS	15	CF	73 (19)	Centre	NS
Spielmanns 2017 <sup>40</sup>	5STS	RCT	27	COPD	Median 63 (IQR 39-71)	Centre	NS
Vaidya 2016 <sup>41</sup>	1minSTS	Pre-post	48	COPD	52 (16)	Centre	Dyspnoea, fatigue
Vanshelboim 2014 <sup>42</sup>	30secSTS	RCT	32	IPF	DLCO 49 (17)	Centre	NS

Zanini 2015 <sup>43</sup>	30secSTS 1 minSTS	RCT	60	COPD	46 (14)	Centre	SpO <sub>2</sub> , pulse, VAS fatigue
Zhang 2018 <sup>44</sup>	5STS 30secSTS	XS	128	COPD	54 (37)	Centre	SpO <sub>2</sub> , pulse, dyspnoea

1minSTS – 1 minute sit to stand test, 2minSTS – 2 minute sit to stand test, 3minSTS – 3 minute sit to stand test, 30secSTS – 30 second STS test, 5STS – five times sit to stand test, 95% CI – 95% confidence interval, CF -cystic fibrosis, COPD – chronic obstructive pulmonary disease, FEV1 – forced expiratory volume in 1 second, GOLD – Global Initiative for Chronic Obstructive Lung Disease; ILD – interstitial lung disease, IPF – idiopathic pulmonary fibrosis, IQR – interquartile range, NS – not stated, LTOT – long term oxygen therapy, RCT – randomised controlled trial, RXT – randomised crossover trial, SpO<sub>2</sub> – oxyhaemoglobin saturation, VAS -visual analogue scale, XS – cross-sectional

Table S4. Included studies for step tests

Study	Exercise test	Study design	Number of participants (n)	Diagnosis	Severity (FEV <sub>1</sub> % pred, mean and SD unless stated)	Location of test	Outcomes reported
Aurora 2001 <sup>45</sup>	3MST	XS	28	CF	34 (SD NS)	Centre	SpO <sub>2</sub> , pulse Comparison to 6WT
Basso 2010 <sup>46</sup>	6MST	XS	19	Asthma	88 (8)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Bonnevie 2017 <sup>47</sup>	6MStepper	Retrospective	24	COPD	Median 45%predicted	Centre	SpO <sub>2</sub> , pulse
Bonnevie 2019 <sup>48</sup>	6MStepper	Retrospective	69	COPD	Median 36%predicted	Centre	SpO <sub>2</sub> , pulse

Borel 2010 <sup>49</sup>	6MStepper	Reliability and validity	16	COPD	54 (21)	Centre	SpO <sub>2</sub> , heart rate (polar), dyspnoea, fatigue
Borel 2016 <sup>50</sup>	3MST	RXT	40	COPD	55 (15)	Centre	Gas exchange, Dyspnoea, leg discomfort
Chehere 2016 <sup>51</sup>	6MStepper	XS	31	ILD	DLCO 52 (16)	Centre	Gas exchange, SpO <sub>2</sub> , heart rate (polar), dyspnoea, leg discomfort
Coquart 2015 <sup>52</sup>	6MStepper	Pre-post	35	COPD	63 (21)	Centre	SpO <sub>2</sub> , heart rate (polar), dyspnoea, fatigue

Cox 2013 <sup>53</sup>	3MST	XS	10	CF	55	Centre, remote	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
da Costa 2014 <sup>54</sup>	6MStepper	XS	32	COPD	46 (18)	Centre	SpO <sub>2</sub> , heart rate (polar)
Dal Corso 2007 <sup>55</sup>	6MST	XS	31	ILD	77 (18)	Centre	Gas exchange, ECG, SpO <sub>2</sub> , dyspnoea, leg effort
Dal Corso 2013 <sup>56</sup>	MIST	XS	34	COPD	46 (14)	Centre	Gas exchange, ECG, SpO <sub>2</sub> , dyspnoea, leg effort
De Camargo 2011 <sup>57</sup>	Chester	XS	32	COPD	46 (15)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue

De Camargo 2013 <sup>58</sup>	Chester, MIST	XS	17	Bronchiectasis	61 (22)	Centre	SpO <sub>2</sub> , pulse, blood pressure, dyspnoea, fatigue
Delourme 2012	6minStepper	Validation	84	ILD	DLCO 51 (18) %pred	Center	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Fabre 2017 <sup>59</sup>	6MStepper	Retrospective	50	COPD	57 (20)	Centre	SpO <sub>2</sub> , pulse
Fox 2013 <sup>60</sup>	Step oximetry test	RXT	64	PAH, CTEPH	DLCO 69 (22) %pred	Centre	SpO <sub>2</sub> , pulse, dyspnoea
Grosbois 2015 <sup>18</sup> Coquart 2017 <sup>19</sup>	6MStepper	Retrospective	211	COPD	41 (18)	Home	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Grosbois 2016 <sup>61</sup>	6MStepper	Retrospective	91	COPD	55 (19)	Centre	SpO <sub>2</sub> , pulse
Holland 2011 <sup>62</sup>	3MST	Prospective	101	CF	61 (23)	Centre	SpO <sub>2</sub> , heart rate (polar),

							dyspnoea, fatigue
Jose 2016 <sup>63</sup>	Chester, MIST	XS	77	Hospitalised for respiratory reason	Median 57%predicted	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Karloh 2013 <sup>64</sup>	Chester	XS	10	COPD	32 (12)	Centre	SpO <sub>2</sub> , pulse, blood pressure, dyspnoea
Marrara 2012 <sup>65</sup>	6MStepper	RCT physical training vs control	43	COPD	49 (15)	Centre	SpO <sub>2</sub> , heart rate, (polar), dyspnoea, fatigue
Mazzarin 2018 <sup>27</sup>	6MStepper	XS	39	COPD on LTOT	Median 29%predicted	Home	NS

Murphy 2005 <sup>66</sup>	3MST	RCT home pulmonary rehab vs control	26	COPD post exacerbation	38 (12)	Centre	SpO <sub>2</sub> , pulse, dyspnoea
Narang 2003 <sup>67</sup>	3MST	XS	19	CF	75 (SD NS)	Centre	SpO <sub>2</sub> , pulse
Perrault 2009 <sup>68</sup>	3MST at 4 rates	XS	43	COPD	49 (16)	Centre	Gas exchange, ECG, SpO <sub>2</sub> , dyspnoea
Pessoa 2014 <sup>69</sup>	3MST – free cadence	XS	32	COPD	46 (18)	Centre	SpO <sub>2</sub> , heart rate (polar), blood pressure, dyspnoea, fatigue
Pichon 2016 <sup>70</sup>	6MStepper	Pre-post	62	COPD	46 (16)	Centre	SpO <sub>2</sub> , pulse, dyspnoea, fatigue

Rammaert 2011 <sup>71</sup>	6MStepper	Pre-post	17	IPF	DLCO 7.8(4.0)	Centre	NS
Rusanov 2008 <sup>72</sup>	15-steps climbing exercise oximetry test	XS	51	IPF	DLCO 36 (14)	Centre	SpO <sub>2</sub> , pulse
Shitrit 2009 <sup>73</sup>	15-steps climbing exercise oximetry test	Prospective longitudinal	51	IPF	DLCO 36 (14)	Centre	SpO <sub>2</sub> , pulse
Starobin 2006 <sup>74</sup>	15-steps climbing exercise oximetry test	XS	50	COPD	43 (20)	Centre	SpO <sub>2</sub> , pulse
Tancredi 2004 <sup>75</sup>	3MST	XS	43	Asthma	NS	Centre	ECG, SpO <sub>2</sub> , FEV <sub>1</sub>

3MST – 3-minute step test, 6MST – 6-minute step test at free cadence, 6minStepper – 6-minute step test on hydraulic stepper equipment, CF -cystic fibrosis, COPD – chronic obstructive pulmonary disease, CTEPH – chronic thromboembolic pulmonary hypertension, DLCO – diffusing capacity for carbon monoxide, ECG – electro-cardiogram, FEV<sub>1</sub> – forced expiratory volume in 1 second, GOLD – Global Initiative for Chronic Obstructive Lung Disease; LTOT-

long term oxygen therapy, ILD – interstitial lung disease, IPF – idiopathic pulmonary fibrosis, MIST – modified incremental step test, NS- not stated, PAH – pulmonary arterial hypertension, RCT – randomised controlled trial, RXT – randomised crossover trial, SpO<sub>2</sub> – oxyhaemoglobin saturation, VAS -visual analogue scale

Table S5. Included studies for Timed up and Go

Study	Exercise test	Study design	Number of participants (n)	Diagnosis	Severity (eg FEV1% pred, mean and SD)	Location of test	Monitoring
Al Haddad 2016 <sup>76</sup>	TUG	XS	119	COPD	59 (18)	Centre	NS
Albarrati 2016 <sup>77</sup>	TUG	XS	520	COPD	58 (19)	Centre	NS
Beauchamp 2009 <sup>78</sup>	TUG	XS	39	COPD	42 (17)	Centre	NS
Benton 2009 <sup>7</sup>	TUG	XS	40	COPD	37 (3)	Centre	NS
Butcher 2004 <sup>79</sup>	TUG	XS	30	COPD	46 (4)	Centre	NS
Butcher 2012 <sup>12</sup>	TUG	XS	13	COPD	48 (14)	Centre	NS
Grosbois 2015 <sup>18</sup> Coquart 2017 <sup>19</sup>	TUG	Pre-post	211	COPD	42 (18)	Home	SpO <sub>2</sub> , pulse, dyspnoea, fatigue
Marques 2016 <sup>80</sup>	TUG	XS	60	COPD	65 (23)	Centre	NS

Mazzarin 2018 <sup>27</sup>	TUG	XS	39	COPD on LTOT	Median 29%predicted	Home	NS
Mekki 2019 <sup>81</sup>	TUG	RCT	45	COPD	58 (14)	Centre	NS
Mesquita 2013 <sup>82</sup>	TUG	XS	95	COPD	Median 33%predicted	Centre	NS
Mesquita 2016 <sup>83</sup>	TUG	Pre-post	500	COPD	Median 46%predicted	Centre	NS
Neves 2018 <sup>29</sup>	TUG	Controlled trial	20	COPD	58 (21)	Centre	NS
Rosenbek 2015 <sup>38</sup>	TUG	Pre-post	37	COPD	27 (13)	Home	NS
Vainshelboim 2019 <sup>84</sup>	TUG	Observational	34	IPF	DLCO 50 (15) %predicted	Centre	NS
Wilke 2015 <sup>85</sup>	TUG	Observational	85	COPD	34 (14)	Home	NS

CF – cystic fibrosis, COPD – chronic obstructive pulmonary disease, FEV<sub>1</sub> – forced expiratory volume in 1 second, GOLD – Global Initiative for Chronic Obstructive Lung Disease; IPF – idiopathic pulmonary fibrosis, LTOT – long term oxygen therapy, NS – not stated, RCT – randomised controlled trial, RXT – randomised crossover trial, SpO<sub>2</sub> – oxyhaemoglobin saturation, TUG – timed up and go, VAS -visual analogue scale

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