Supplemental Table 4. Characteristics of exercise training, testing mode and results of all studies

| **Author + Date** | **Intervention(s)** | **Program Length + Total Sessions** | **Experimental Exercise Session Length, Frequency + Intensity** | **Physical Fitness Test(s)** | **Baseline** | **Follow-Up** | **Change** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *(Quasi-) Randomized Controlled Trials* | | | | | | | |
| Boyd (2012)36 | Aerobic exercise  v.  Usual care + asthma education | 12 wk,  36 | 30 min,  3 x wk,  60 – 75% HRmax | Max treadmill test | VO2peak (mL/kg/min):  Exercise: 24.5\*  Control: NR | VO2peak (mL/kg/min):  Exercise: 27.5\*  Control: NR | ↑ VO2peak (mL/kg/min):  Exercise: +2.6 (*P*≤ .04)  Control: NR  (difference within groups) |
| Bundgaard (1983)37 | Aerobic and resistance exercise  v.  Stretching exercises + breathing exercises + low intensity aerobic exercise | 8 wk,  20 | 60 min,  2 x wk,  NR,  3 sets x 50% max repetitions in 30 sec x 6 exercises | Max treadmill test | VO2max (mL/kg/min):  Exercise: 27.6  Control: 28.2 | VO2max (mL/kg/min):  Exercise: 30.4  Control: 27.7 | ↑ VO2max (mL/kg/min) Exercise: *P* =.02  Control: *P* =.33 |
| Cambach (1997)61 | Aerobic exercise  v.  Inactive control | 12 wk,  36 | 45 mins,  3 x week,  ≥60% HRmax;  60-75% Wmax | 6MWT,  Submax cycle test | 6MWD (m):  Exercise: 598±126  Control: 639±132  Submax HR (bpm):  Exercise: 134±24  Control: 135±19 | 6MWD (m):  Exercise: +63±89  Control: +8±63  Submax HR (bpm):  Exercise: -7±12  Control: -1±6 | ↑6MWD:  *P* <.05  (difference between groups)  ↓Submax HR:  *P* <.05  (difference between groups) |
| Coelho (2018)38 | Aerobic exercise (unsupervised) + asthma/exercise education  v.  Asthma/exercise education | 12 wk,  60 | >30 mins,  5 x wk,  mean no. steps increased by 1000 bi-weekly | 6MWT | 6MWD (m):  Exercise: 535.5±41.5  Control: 522.7±76.4 | 6MWD (m):  Exercise: 549.7±46.1  Control: 515.5±75.6 | ↑6MWD:  *P* =.006  (difference between groups) |
| Dogra (2010 & 2011)62, 63 | Supervised aerobic + resistance exercise  v.  Unsupervised aerobic + resistance exercise  v.  Waitlist control | Supervised:  12 wk,  36  Unsupervised:  12 wk,  60 | Supervised:  NR,  3 x wk,  70-85% HRpeak  Unsupervised:  30 min,  5 x wk,  70-85% HRmax | Max treadmill test | VO2max (L/min):  Supervised: 2.63±0.20  Unsupervised: 2.88±0.26  Control: 2.66±0.27  Submax HR (bpm):  Supervised: N/A  Unsupervised: 172.9±9.6  Control: 170.2±6.6 | VO2max (L/min):  12 weeks Supervised: 2.88±0.21  Unsupervised: 2.76±0.28  Control: 2.77±0.29    Submax HR (bpm):  Supervised: N/A  Unsupervised: 168.4±10.4  Control: 167.8±8.1 | ↑VO2peak:  Supervised v. Control: NR  Unsupervised v. Control: *P* =.662  Supervised v. Unsupervised: NR (different papers)  ↓Submax HR:  Supervised v. Control: N/A  Unsupervised v. Control: *P* =.659  Supervised v. Unsupervised: N/A (different papers) |
| Emtner (1998 & 2005)65, 66 | Land-based aerobic exercise  v.  Water-based aerobic exercise | 10 wk,  26 | 45 min,  2-5 x wk,  80-90% APHRmax,  RPE: 7-8 (/10) | 12MWT | 12MWD (m):  Land exercise: 1430  Water exercise: 1384 | 12MWD (m):  Land exercise: 1520  Water exercise: 1485 | ↑12MWD (m):  Both groups significantly improved (*P* <.05) walking distance |
| 3-yr follow-up | Adherers:  NR,  2 x wk,  RPE: 7.1-7.7 (/10)  Non-adherers:  NR,  <2 x week,  RPE: 2.3-7.5 (/10) | Submax cycle test | Submax HR(bpm):  Adherers: 151±18  Non-adherers: 155±20 | Submax HR(bpm):  10 weeks:  Adherers: 143±20  Non-adherers: 139±24  3 years:  Adherers: 143±23  Non-adherers: 144±23 | ↓Submax HR(bpm):  Both groups: *P* <.05  (difference within groups between baseline and both follow-up assessments) |
| Evaristo (2020)73 | Aerobic exercise + education  v.  Breathing exercise + education | 12 wk,  24 | 40 min,  2 x wk,  60-80% HRR | ISWT | ISWD (m):  Aerobic exercise: 342±96  Breathing exercise: 360±104 | NR | ISWD (m):  Aerobic exercise: 90 [65, 116]  Breathing exercise: 73 [37, 109] |
| Farid (2005)40 | Aerobic exercise  v.  Inactive control | 8 wk,  24 | 35 min,  3 x week,  NR | 6MWT | NR | 6MWD (m):  Exercise: +307.5  Control: -18.78 | ↑6MWD (m):  Exercise group improved significantly more than control (*P* <.05) |
| Franca-Pinto (2015)41 | Aerobic exercise + breathing exercise + education  v.  Breathing exercise + education | 12 wk,  24 | 35 min,  2 x wk,  Vigorous | Max treadmill test | VO2max (mL/kg/min):  Exercise: 27.0±4.2  Control: 25.5±5.9  Max workload (W):  Exercise: 190±32  Control: 203±67 | NR | ↑VO2max (mL/kg/min):  Exercise: +1.0 [-0.5, 2.4],  Control: -2.4 [-4.5, 0.2]  *P* <.02 difference between groups; NS difference within groups)  ↑Max workload (W):  Exercise: +57.1 [41.1, 73.1],  Control: +3.3 [-18.9, 25.4] |
| Freitas (2017 & 2018)68, 69 | Aerobic + resistance exercise + diet + psychology counselling + education  v.  Breathing exercises + stretching + diet + psychology counselling + education | 3 mo,  NR | 30-90 min,  2-4 x wk,  50-75% VO2peak,  2-3 sets x 10 reps @ 50-70% 1RM | Max cycle test,  +  1RM x pectoral, calf, deltoid + quadriceps muscles | VO2peak (L/min):  Exercise: 1.42 {1.32, 1.59}  Control: 1.29 {1.18, 1.48}  VO2peak (mL/kg/min):  Exercise: 16.0±2.4  Control: 15.0±2.6  1RM (kg):  Pectoral  Exercise: 5.0 {4.0, 6.0}  Control: 4.0 {4.0, 5.0}  Calf  Exercise: 70.0 {60.0, 90.0}  Control: 70.0 {53.7, 82.5}  Deltoid  Exercise: 5.0 {5.0, 6.0}  Control: 5.0 {4.0, 6.0}  Quadriceps  Exercise: 75\*  Control: 75\* | NR | ↑VO2peak (L/min): *P* <.001  Exercise: +0.16 {0.09, 0.23}  Control: +0.01 {-0.10, 0.08}  ↑VO2peak (mL/kg/min): *P* <.001  Exercise: +3.0 {2.4, 4.0}  Control: +0.9 {-0.3, 1.3}  ↑1RM (kg):  Pectoral *P* <.001  Exercise: +2.0 {1.0, 4.0}  Control: +1.0 {0.0, 1.0}  Calf *P* <.001  Exercise: +40.0 {30.0, 70.0}  Control: +10.0 {0.0, 25.0}  Deltoid *P* <.001  Exercise: +3.0 {2.0, 4.0}  Control: 0.0 {0.0, 2.0}  Quadriceps *P* <.001  Exercise: +50\*  Control: +15\* |
| Gonçalves (2008)43 | Aerobic exercise + breathing exercise + education  v.  Breathing exercise + education | 3 mo,  26 | 30 min,  2 x wk,  70% max power | Max treadmill test | VO2peak (mL/kg/min):  Exercise: 20.6 (16.3-24.5)  Control: 22.2 (17.7-26.0)  Anaerobic Threshold  (O2 mL/kg/min):  Exercise: 15.0 (11.9-19.7)  Control: 16.2 (13.2-21.0) | VO2peak (mL/kg/min):  Exercise: 25.8 (16.2-31.3)  Control: 20.5 (17.3-24.1)  Anaerobic Threshold  (O2 mL/kg/min):  Exercise: 17.4 (10.1-23.3)  Control: 15.4 (12.5-19.9) | Exercise group significantly improved aerobic fitness between baseline and follow-up, leading to a significant difference between groups at follow-up (both *P* <.05) |
| Haas (1987)44 | Aerobic exercise  v.  Untrained control | 12 wk,  36 | 20-40 min,  3 x wk,  60-80% APHRmax | Max treadmill test | VO2peak (mL/kg/min): Exercise: 33.8±2.25  Control: 35.2±2.83  VE (L/min):  Exercise: 70.7±6.6  Control: 73.5±6.0 | VO2peak (mL/kg/min): Exercise: 38.8±3.02  Control: 34.5±3.00  VE (L/min):  Exercise: 73.3±5.4  Control: 69.2±6.3 | Exercise group significantly increased VO2peak by 15% (*P* <.01).  No significant changes to VE. |
| Hiles (2021)74 | Yoga + mindfulness + PA education  v.  PA education | 16 wk,  32 | 75 min,  2 x wk,  NR | 6MWT | 6MWD (m):  Yoga: 436 [384, 488]  Control: 526 [424, 628] | 6MWD (m):  Yoga: 453 [392, 513] Control: 546 [441, 652] | 6MWD (m):  Yoga: 33 [−2, 67] Control: 20 [−40, 80] |
| Lage (2021)75 | Inspiratory muscle training + education  v.  Education | 8 wk,  80 | 11 min,  2 x day x 5 x wk,  50% maximal inspiratory pressure,  RPE: 4-6 (/10) | ISWT | ISWD (m):  Exercise: 393.2 (26.7)  Control: 424.0 (25.9) | ISWD (m):  Exercise: 320.6 (27.5)  Control: 312.5 (25.4) | ↑ISWD (m):  Exercise: 30.9 [−14.3, 58.3]  Control: −8.1 [−34.4, 17.5]  Difference between groups: *P* =.165 |
| Majd (2020)76 | Aerobic exercise + resistance exercise + education  v.  Usual care | 12 wk,  24 | 60 min,  2 x wk,  60-85% VO2peak,  2 sets x 6-12 reps @ 80% 1RM | Incremental treadmill or cycle test,  ISWT,  ESWT | VO2peak (mL/kg/min):  Treadmill test  Exercise: 22.5±6.2  Control: 22.9±3.9  Cycle test  Exercise: 17.5±6.0  Control: 16.9±4.3  ISWD (m):  Exercise: 418±172  Control: 443±121 | VO2peak (mL/kg/min):  Treadmill test  Exercise: 23.2±7.6  Control: 22.3±2.4  Cycle test  Exercise: 18.8±6.9  Control: 16.1±2.8  ISWD (m):  Exercise: 450±199  Control: 403±104 | Mean difference between groups over time  ↑VO2peak (mL/kg/min):  Treadmill test  1.4 [-1.1, 3.8]  Cycle test  2.0 [-0.3, 4.2]  ISWD (m):  74 [25, 124] |
| Mendes (2010 & 2011)21, 72 | Aerobic exercise + breathing exercise + education  v.  Breathing exercise + education | 12 wk,  24 | 30 min,  2 x wk,  60% VO2max for 2 wk, then 70% VO2max, then increased by 5% of HR up to 80% HRmax | Max treadmill test | *2011*  VO2max (% predicted):  Exercise: 73.5 (43.6–96.3)  Control: 73.4 (52.5–98.3) | *2011*  VO2max (% predicted):  Exercise: 88.0 (64.9–109.3)  Control: 75.6 (57.6–99.5) | *2011*  Exercise group increased VO2max compared with the control group (*P* <.001) |
| *2010*  NR | *2010*  VO2max (mL/kg/min):  Exercise: +5.7  Control: NR | *2010*  Exercise group significantly increased VO2max, leading to a significant between-group difference (both *P* <.001) |
| Meyer (2015)48 | Aerobic + resistance exercise  v.  Control | 12 mo,  52 | 60 min,  1 x week,  >60%HRpeak | Max cycle test | VO2max (mL/kg/min):  Exercise: 15.7±5.0  Control: 15.8±4.0  Peak workload (W):  Exercise: 97±32  Control: 107±22  VE (L/min):  Exercise: 38.2±17.3  Control: 42.1±10.0 | VO2max (mL/kg/min):  Exercise: 20.4±4.0  Control: 16.8±6.2  Peak workload (W):  Exercise: 116±31  Control: 100±28  VE (L/min):  Exercise: 51.5±20.3  Control: 42.1±10.3 | Exercise group:  ↑ VO2max (mL/kg/min):  4.6±4.36 (*P* <.005)  ↑ Peak workload (W): 18±18 (*P* =.005)  ↑ VE (L/min): 13.2±18.72 (*P* <.005)  Between groups:  ↑Peak workload(W):  *P* <.05 |
| Rekha (2020)77 | Resistance exercise  v.  Incentive spirometer | 4 wk,  16 | NR,  4 x wk,  8-10 repetitions x 4 exercises | Manual muscle testing | Resistance exercise: 2.33±0.98  Incentive spirometer: 2.33±0.98 | Resistance exercise:  3.60±0.99  Incentive spirometer:  2.73±0.88 | Resistance exercise:  *P* =.001  Incentive spirometer:  *P* =.009 |
| Scichilone (2012)53 | Aerobic exercise  v.  Control | 10 wk,  23.7±3.9 | 40-70 min,  2-3 x wk,  20% of session @ max power output, 10% @ 75–90%, 70% @ 60–65% | Max rowing test | Mean power output (W/stroke)  Exercise:  1000m test: 123±63  2000m test: 118±52  Control: NR | Mean power output (W/stroke)  Exercise:  1000m test: 148±66 2000m test: 131±54  Control: NR | ↑ Mean power output (W/stroke)  Exercise:  1000m test: *P* =.02  2000m test: *P* =.03  Control: NR |
| Shaw (2010)54 | Aerobic exercise (Ex)  v.  Diaphragmatic breathing exercise (DB)  v.  ExDB  v.  Control | 8 wk,  NR | 30 min,  3 x wk,  60% APHRmax | Submax cycle test | VO2max (mL/kg/min):  Ex: 33.6±7.83  Control: 39.4±6.9  ExDB: 37.4±9.6  DB: 38.5±8.5 | VO2max (mL/kg/min):  Ex: 42.6±7.8  Control: 39.2±7.2  ExDB: 47.3±8.3  DB: 38.8±7.6 | ↑ VO2max (mL/kg/min):  Post-training:  Control vs ExDB: *P* =.001  DB vs ExDB: *P* =.000  Ex vs ExDB: *P* =.047  Amount of change:  Control vs Ex: P =.043  Control vs ExDB: *P* =.047 |
| Toennesen (2018)55 | Aerobic exercise (Ex)  v.  Diet counselling (D)  v.  ExD  v.  Usual care control | 8 wk,  22 | 20-30 min,  3 x wk,  30-90% “max intensity” | Max incremental test | VO2max (mL/kg/min):  Ex: 38.4±8.9  D: 33.8±6.7  ExD: 31.5±6.2  Control: 33.5±7.5 | NR | ↑ VO2max (mL/kg/min):  Ex: +3.1±3.6  D: +0.8±2.8  ExD: +5.3±2.5  Control: +0.2±4.6 |
| Türk (2020)56 | Bodyweight HIIT + diet counselling + psychological counselling  v.  Bodyweight HIIT + diet counselling + psychological counselling + self-management support (SMS)  v.  Usual care | 12 wk,  36 | 40-60 min,  3 x wk,  90% VO2max;  RPE ≥7 (/10),  3-6 sets x 45sec work/30sec rest x 4 exercises | Max cycle,  6MWT | VO2max (%predicted):  Bodyweight HIIT: 51.1±17.7  Bodyweight HIIT+SMS: 60.6±11.3  Usual care: 56.5±11.3  6MWD (m):  Bodyweight HIIT: 578±76  Bodyweight HIIT+SMS: 606±56  Usual care: 587±73 | NR | ↑ VO2max (%predicted):  Bodyweight HIIT: +13.2±9.2, *P* <.005  Bodyweight HIIT+SMS: +11.2±13.5  Usual care: −0.1±10.5  ↑ 6MWD (m):  Bodyweight HIIT: 52±40, *P* <.005  Bodyweight HIIT+SMS: 63±40, p<0.05  Usual care: −14±51 |
| Turner (2011)58 | Aerobic + resistance exercise  v.  Usual care | 6 wk,  14 | 80-90 min walking training  45 min circuit training,  NR,  Walking: 80% mean 6MWT speed; Circuit training: RPE 12-14 (/20) | 6MWT,  Handgrip dynamometer, + Quadriceps strain gauge | 6MWD (m):  Exercise: 569±88  Control: 522±111  Quadriceps strength (% predicted):  Exercise: 84±30  Control: 78±30  Hand grip strength (% predicted):  Exercise: 109±23  Control: 110±27 | 6MWD (m):  Exercise: 605±98  Control: 528±114  Quadriceps strength (% predicted):  Exercise: 88±24  Control: 75±32  Hand grip strength (% predicted)  Exercise: 109±20  Control: 115±29 | ↑ 6MWD (m):  Exercise: 36±37 (*P* < .01)  Control: 6±38 (*P* = .54)  (Not significant between groups) |
| *Pre-Post Experimental Studies* | | | | | | | |
| Afzelius-Frisk (1977)35 | Aerobic exercise | 8-12 wk,  NR | 30 min,  2 x week  85-90% HRpeak | Max + submax cycle tests | VO2max (L/min):  Max: 1.66±0.31  Submax: 1.16±0.09  Peak workload (W):  109±21  HR (bpm):  Max: 183±17  Submax: 154±14  VEmax (L/min):  Max: 59.7±10.6  Submax: 35.8±4.3 | VO2max (L/min):  Max: 1.94±0.42  Submax: 1.06±0.19  Peak workload (W):  134±18  HR (bpm):  Max: 186±13  Submax: 137±14  VEmax (L/min):  Max: 74.6±11.8  Submax: 32.7±4.2 | ↑ VO2max (L/min):  +0.28 (17 %)  ↑ Peak workload (W):  +25 (23 %)  ↓Submax HR (bpm):  -17 (11%)  ↓Submax VEmax (L/min):  “Significantly reduced” |
| Candemir (2017)60 | Aerobic exercise + resistance exercise | 8 wk,  24 | 30 min,  3 x wk,  85% VO2peak,  2-3 sets x 10 reps @ 45-70% 1RM | ISWT,  ESWT | ISWD (m):  281±104  ESWT (min):  13.3±7.4 | ISWD (m):  339±95  ESWT (min):  17.5±4.5 | ↑ ISWD (m):  *P* <.001  ↑ ESWT (min):  *P* =.005 |
| de Nijs (2020)78 | Exercise + education + psychology counselling + medication optimisation | 12 wk,  NR | NR | ISWT | ISWD (m):  High altitude: 418 ± 224  Sea level: 492 ± 305 | ISWD (m):  High altitude: 575 ± 261  Sea level: 549 ± 324 | ↑ ISWD (m):  High altitude: 156.9 (20.1), *P* <.001  Sea level: 57.6 (16.0), *P* <.001 |
| Deniz (2019)39 | Aerobic exercise + resistance exercise + breathing + stretching exercises | 2 wk,  4 | 30-120 min,  2 x wk,  60-90% HRmax | 6MWT | 6MWD (m):  374±93 | 6MWD (m):  415±96 | ↑ 6MWD (m):  *P* <.001 |
| Emtner (1996 & 1998)67, 64 | Aerobic exercise | 10 wk,  50 | 45 min,  2-5 x wk,  80-90% APHRmax  RPE: 7-8 (/10) | 12MWT,  Submax cycle test | 12MWD (m):  1350  Submax HR (bpm):  167 | 12MWD (m):  2 wk: 1,444  6 wk: 1,486  10 wk: 1,461  Submax HR (bpm):  10 wk: 155 | ↑ 12MWD (m):  *P* <.05  Submax HR (bpm):  *P* <.05 |
| 3 yr,  Group A: 353  Group B: 216  Group C: 86 | 45 min,  Group A:  ≥3 x week, 7/10  Group B:  1-2 x wk, 6/10  Group C:  <1 x week, 4/10 | 12MWT | 12MWD (m):  Group A: 1548  Group B: 1473  Group C: 1425\* | 12MWD (m):  Group A: 1481\*  Group B: 1473\*  Group C: 1355\* | ↑ 12MWD (m):  Group A v. Group C = *P* <.05  Group B v. Group C = *P* <.05 |
| Freeman (1989)42 | Aerobic exercise | 5 wk,  15 | Varied,  3 x wk,  Self-selected (mean = 83.8±10.0% VO2max) | Max treadmill test,  2-mile treadmill time trial +  2 x Submax treadmill test | Max treadmill test:  VO2max (mL/kg/min): 41.0±8.2  VEmax (L/min): 81.5±91.4  2-mile treadmill time trial:  Time to complete: 20.3±4.6  Peak VO2: 34.9±7.9  Submax HR (bpm): 167\* | Max treadmill test:  VO2max (mL/kg/min): 43.8±8.8  VEmax (L/min): 85±21  2-mile treadmill time trial:  Time to complete: 18.2±4.3  Peak VO2: 39.1±9.1  Submax HR (bpm): 153\* | Max treadmill test:  ↑ VO2max (mL/kg/min): *P* <.05  2-mile treadmill time trial:  ↓ time to complete: *P* <.01  ↑ Peak VO2: *P* <.01  ↑ %VO2max used: *P* <.01  ↓Submax HR (bpm): *P* <.01 |
| Hallstrand (2000)45 | Aerobic exercise | 10 wk,  30 | >30 min,  3 x wk,  75% VO2max | Max cycle test | VO2max (mL/kg/min): 22.7±4.7  VEmax (L/min): 68.5±10.1  AT (L/min): 0.99±0.13 | VO2max (mL/kg/min): 25.3±4.7  VEmax (L/min): 67.4±11.9  AT (L/min): 1.09±0.15 | ↑VO2max (mL/kg/min): *P* =.01  ↑ VEmax (L/min): *P* =.78  ↑ AT (L/min): *P* =.03 |
| Heba (2013)46 | Aerobic exercise | 12 wk,  36 | 50 min,  3 x wk,  40-60% max work rate | Max cycle test | Peak Workload (W):  106.25\* | Peak Workload (W):  131.25\* | ↑ Peak Workload (W):  *P* =.000 |
| Hildenbrand (2010 & 2011)70, 71 | Swimming | 12 wk,  36 | 30-45 min,  3 x wk,  RPE: 4-8 (/10) | Max cycle test | VO2max (mL/kg/min): 31.2±9.8 | VO2max (mL/kg/min): 33.4±10.4 | ↑ VO2max (mL/kg/min):  *P* =.038 |
| Mendes (2019)47 | Aerobic exercise | 12 wk,  24 | 35 min,  2 x wk,  60% VO2max for 2 weeks, then 70% VO2max, then increased by 5% of HR up to 80% HRmax | Max treadmill test | VO2max (mL/kg/min): Summer-to-Winter: 24.4±5.4  Winter-to-Summer: 25.6±4.9 | VO2max (mL/kg/min): Summer-to-Winter:  28.8±5.2  Winter-to-Summer:  28.5±3.9 | ↑ VO2max (mL/kg/min): Summer-to-Winter:  3.7±3.00, *P* <.001  Winter-to-Summer: 2.9±2.93, *P* <.001 |
| Miyamoto (2014)49 | Aerobic exercise + resistance exercise + breathing + stretching exercises | 12 wk,  144 | 60 min,  2 x day x 6 x wk for 2 wk, then 1-2 x wk for 10 wk,  60-80% max ISWT speed | ISWT,  Handgrip dynamometer, + Quadriceps dynamometer | ISWD (m):  168±109  Handgrip Force  (kg): 20.4±9.0  % predicted: 67±24  Quadriceps Force  (kg): 15.1±9.8  % predicted: 52±26 | ISWD (m):  222±139  Handgrip Force  (kg): 21.0±8.8  % predicted: 68±21  Quadriceps Force  (kg): 18.3±9.5  % predicted: 64±30 | ↑ ISWD (m):  p=0.006  ↑ Handgrip Force  (kg): p=0.577  % predicted: *P* =.692  ↑ Quadriceps Force  (kg) p *P* 0045  % predicted: *P* =.029 |
| Peric (2018)50 | Aerobic exercise | 7 wk,  21 | 60 min,  3 x wk,  100-110% HR @ AT | Max treadmill test | VO2max (mL/kg/min):  34.1±2.2  AT (O2 mL/kg/min):  20.1±2.5 | VO2max (mL/kg/min):  36.0±2.2  AT (O2 mL/kg/min):  24.5±2.9 | ↑ VO2max (mL/kg/min):  1.9±0.6, *P* =.0004  ↑ AT (O2 mL/kg/min):  4.5±1.9, *P* =.0024 |
| Robinson (1992)51 | Aerobic + resistance exercise | 12 wk,  NR | NR,  NR,  Mean: 80% HRpeak; Peak: 96% HRpeak,  1-4 sets x 50sec work/30sec rest x 7 exercises | Max cycle test | VO2peak (mL/kg/min):  27.5 [21.9, 33.0]  Peak workload (W):  184 [148, 221] | VO2peak (mL/kg/min):  6 wk: 31.5 [23.5-39.6]  12 wk: 31.3 [23.5, 39.1]  Peak workload (W):  6 wk: 203 [148, 257]  12 wk: 210 [156, 264] | ↑ VO2peak (mL/kg/min):  Pre, 6 wk and post (*P* <.05)  ↑ Peak workload (W):  Pre, 6 wk and post (*P* <.05) |
| Sahin (2019)52 | Aerobic exercise + resistance exercise + breathing + stretching exercises | 8 wk,  16 | 30-120 min,  2 x wk,  60-90% HRmax,  8-10 reps | 6MWT | 6MWD (m)  Partially controlled:  435 {378, 500}  Uncontrolled:  370 {290, 435} | 6MWD (m)  Partially controlled:  480 {443, 520}  Uncontrolled:  390 {350, 470} | ↑ 6MWD (m)  Partially controlled:  40 {20, 70}, *P* =.001  Uncontrolled:  40 {10, 60}, *P* <.001 |
| Türk (2017)57 | Aerobic exercise + resistance exercise | 12 wk,  36 | 60 min,  3 x wk,  ≤ AT + high intensity | 6MWT | 6MWD (m):  580±117 | 6MWD (m):  632±102 | ↑ 6MWD (m):  53±58  (*P* <.001) |
| Zampogna (2019)59 | Aerobic exercise | 3 wk,  15 | 30 min,  5 x wk,  50-70% predicted max workload | 6MWT,  Resting HR | 6MWD (m):  460±94  Resting HR (bpm):  78±11 | 6MWD (m):  500±90  Resting HR (bpm):  77±11 | ↑ 6MWD (m):  p<0.001  ↓Resting HR (bpm):  *P* =.01 |
| Data are mean±standard deviation, median (95% confidence interval), median {interquartile range}, or mean [95% confidence interval]. \* = data estimated from graph.  Abbreviations: 1RM, 1 repetition maximum; 6MWD, six-minute walk distance; 6MWT, six-minute walk test; 12MWT, 12-minute walk test; 12MWD, 12-minute walk distance; APHRmax, age-predicted heart rate maximum; AT, anaerobic threshold; bpm, beats per minute; D, diet; DB, diaphragmatic breathing; ESWT, endurance shuttle walk test; Ex, aerobic exercise; ExDB, aerobic exercise and diaphragmatic breathing; HIIT, high intensity interval training; HR, heart rate; ISWT, incremental shuttle walk test; m, metres; Max, maximal; NR, not reported; NS, not significant; PA, physical activity; RPE, rate of perceived exertion; SMS, self-management support; VE, ventilation; VO2, oxygen uptake; VO2max, maximal oxygen uptake; Wmax, maximal watts | | | | | | | |