**Evidence Table 1e. Change in quality of life: hyperventilation reduction breathing techniques versus control**

| **Study** | **Quality of life outcomes** | **Follow-up** | **Group** | **N random-ized** | **Follow-up N** | **Baseline mean (SD)** | **Mean change (SD) from baseline** | **p-value for difference between groups at followup** | **Standardized Effect Size Hedges’ d (95% CI)**  **(coded higher= better)** | **Functioning or additional quality of life outcomes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cooper 200352 | AQLQ-Juniper, total score  (higher= better) | 13w | IG1 (BBT) | 30 | 26 | 5.1 (1.0) | 0.45  (0.11, 1.47)† | 0.4 (for difference across all three groups) | Insufficient data to calculate | **Groups differed in SF-36 role limitations due to physical problems at 13w.\* Groups differed in SF-36 role limitations due to physical problems and social functioning at 26w.\*** NSD between groups on other components of the SF-36 at 12 and 26w. |
| CG | 30 | 25 | 5.0 (0.8) | 0.33  (-0.20, 0.75)† |
| 26w | IG | 30 | 23 | 5.1 (1.0) | 1.03  (0.19, 1.69)† | 0.2 (for difference across all three groups) | Insufficient data to calculate |
| CG | 30 | 22 | 5.0 (0.8) | 0.61  (-0.11, 0.95)† |
| Grammato-poulou 201154 | None | 4w, 12w, 26w | IG (HRBT) | 20 | 20 | NA | NA | NA | NA | Groups differed in SF-36 physical components at 4 and 12w, not 26w. NSD between groups in the SF-36 mental component at any time point. |
| CG | 20 | 20 | NA | NA |
| Holloway 200755,72 | SGRQ-total score  (higher= worse) | 26w | IG (Pap-worth) | 39 | 32 | 25.2 (16.1) | -9.3 (9.7) | 0.19 | **0.68**  **(0.22. 1.15)** | No group differences on Impacts and Activities scales of SGRQ at 26 or 52w. **Groups differed in HADS anxiety and depression scores at 26 and 52w.\*** |
| CG | 46 | 40 | 19.7 (11.3) | -3.4 (7.5) |
| 52w | IG (Pap-worth | 39 | 32 | 25.2 (16.1) | -10.0 (9.9) | **0.05\*** | **0.81**  **(0.33, 1.23)** |  |
| CG | 46 | 40 | 19.7 (11.3) | -3.0 (7.2) |
| McGowan 200356,99 | None | 26w | IG (BBT) | 200 | 180 | NA | NA | NA | NA |  |
| CG1 (nurse education) | 200 | 165 | NA | NA |
| CG2 (brief asthma education) | 200 | 145 | NA | NA |
| Opat 200057,77 | AQLQ-Marks, total score  (lower= better) | 4w | IG (BBT) | 18 | 16 | 2.72 (1.58) | NR (NR) | **0.043\*** | Insufficient data to calculate | **Mean AQLQ difference between groups -1.29 (95% CI, -2.53 to -0.05).\*** |
| CG | 18 | 16 | 2.70 (1.61) | NR (NR) |
| Thomas 200959,79-81 | AQLQ-Juniper, total score  (higher= better) | 4w | IG (HRBT) | 94 | 73 | 4.2 (1.0) | 0.92 (1.11) | 0.78 | 0.04  (-0.28, 0.36) | **Groups differed in HADS anxiety and depression scores at 26w.\*** |
| CG | 89 | 79 | 4.3 (0.9) | 0.88 (1.00) |
| 26w | IG | 94 | 63 | 4.2 (1.0) | 1.12 (0.81) | **0.01\*** | **0.43**  **(0.08, 0.78)\*** |
| CG | 89 | 66 | 4.3 (0.9) | 0.74 (0.95) |
| 52w | IG | 94 | 55 | 4.2 (1.0) | **1.52 (0.89)\*** | **0.002\*** | **0.46**  **(0.10, 0.82)\*** |
| CG | 89 | 68 | 4.3 (0.9) | **1.04 (1.16)\*** |
| Thomas 200371,78,82 | AQLQ-Juniper, total score, median  (higher= better) | 4w | IG (HRBT) | 17 | 16 | 4.60 (1.01) | 0.60  (0.05, 1.12)† | **0.018\*** | Insufficient data to calculate |  |
| CG | 16 | 15 | 4.57 (1.27) | 0.09  (-0.25, 0.26)† |
| 26w | IG | 17 | 16 | 4.60 (1.01) | 0.79  (-0.09, 1.40)† | 0.065 | Insufficient data to calculate |
| CG | 16 | 12 | 4.57 (1.27) | 0.03  (-0.33, 0.47)† |
| Cooper 2009§51,75,89 | Mini-AQLQ, total score  (higher= better) | 4w | IG (mouth-taping) | 51 | 51 | NR (NR) | 5.33 (1.19)‡ | 0.40 | Insufficient data to calculate |  |
| CG | NR (NR) | 5.43 (0.94)‡ |

\*Statistically significant change from baseline or between groups (p<0.05)

†Median or median change from baseline (IQR)

‡Mean (SD) at each time point

§Crossover study design, mouth-taping and control phases

Abbreviations: AQLQ: Asthma Quality of Life Questionnaire; BBT: Buteyko breathing technique; CG: control group; CI: confidence interval; HADS: Hospital Anxiety and Depression Scale; HRBT: hyperventilation reduction breathing technique; IG: intervention group; IQR: inter-quartile range; NA: not applicable; NR: not reported; NSD: no significant difference; SD: standard deviation; SF: social functioning (e.g., SF-36 Health Survey); SGRQ: St. George’s Respiratory Questionnaire; w: week(s)