Table 87: Clinical evidence profile: Comparison 5. Combined aerobic and anaerobic training programme versus no exercise programme

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
Quality assessment							**No of patients**		**Effect**			
Change in FEV$_1$ % predicted - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
3 (Beaudoin 2016, Rovedder 2014, Schindel 2015)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	44	45	-	MD 4.27 lower (9.63 lower to 1.09 higher)	LOW	CRITICAL
Change in FEV$_1$ % predicted - *Unsupervised programme* (follow-up 3-6 months; range of scores: 0-100; Better indicated by higher values)												
1 (Hebestreit 2010)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[4]	none	22	13	-	MD 2 higher (5.31 lower to 9.31 higher)	VERY LOW	CRITICAL
Change in FEV$_1$ % predicted - *Supervised programme*												
No evidence available												
Change in FVC % predicted - *Unsupervised programme* (follow-up 3 months; range of score: 0-100; Better indicated by higher values)												
3 (Beaudoin 2016.Rovedder	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[5]	none	44	45	-	MD 1.47 lower (6.21	LOW	CRITICAL

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
2014, Schindel 2015)										lower to 3.27 higher)		
Change in FVC % predicted at 3-6 months - *Unsupervised programme* (follow-up 3-6 months; range of scores: 0-100; Better indicated by higher values)												
1 (Hebestreit 2010)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[6]	none	22	13	-	MD 0.5 higher (4.3 lower to 5.3 higher)	VERY LOW	IMPORTANT
Change in FVC % predicted - *Supervised programme*												
No evidence available												
Change in FEV_1 peak - *Unsupervised programme* (follow-up 3 months; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	very serious[6]	none	8	6	-	MD 2.13 lower (7.06 lower to 2.80 higher)	VERY LOW	IMPORTANT
Change in FEV_1 peak - *Unsupervised programme* (follow-up 3-6 months; Better indicated by higher values)												
1 (Hebestreit 2010)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	23	15	-	MD 2.04 higher (0.08	LOW	IMPORTANT

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute		
										to 4 higher)		
Change in FEV$_1$ peak - *Supervised programme*												
No evidence available												
Time to next exacerbation												
No evidence available												
Change in weight (kg) - *Unsupervised programme* (follow-up 3 months; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[5]	no serious inconsistency	no serious indirectness	very serious[6]	none	8	6	-	MD 0.27 lower (12.95 lower to 12.41 higher)	VERY LOW	IMPORTANT
Change in BMI - *Unsupervised programme* (follow-up 3 months; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	very serious[6]	none	8	6	-	MD 0.06 higher (2.68 lower to 2.80 higher)	VERY LOW	IMPORTANT
Change in BMI - *Unsupervised programme* (follow-up 3-6 months; Better indicated by higher values)												

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute		
1 (Hebestreit 2010)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	serious[5]	none	22	13	-	MD 0.4 higher (0.17 lower to 0.97 higher)	VERY LOW	IMPORTANT
Change in BMI - *Unsupervised programme* (follow-up 12 months; Better indicated by higher values)												
1 (Moorcroft 2004)	randomised trials	very serious[8]	no serious inconsistency	no serious indirectness	serious[5]	none	30	18	-	MD 0.54 higher (0.09 lower to 1.17 higher)	VERY LOW	IMPORTANT
Change in BMI - *Supervised programme*												
No evidence available												
Change in quality of life: CFQ-R physical - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	very serious[4]	none	8	6	-	MD 0.60 higher (17.56 lower to 18.76 higher)	VERY LOW	CRITICAL

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute		
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): 6.1 (-4 to 8)	22 Median (IQR): 2.4 (--1.0 to 13)	P=0.742	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R body image - _Unsupervised programme_ (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	serious[2]	none	8	6	-	MD 6.03 lower (18.89 lower to 6.83 higher)	VERY LOW	CRITICAL
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): 3.3 (-11 to 22)	22 Median (IQR): 3.0 (-2 to 11)	P=0.915	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R digestive - _Unsupervised programme_ (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	serious[2]	none	8	6	-	MD 14.80 higher (0.43 to 29.17 higher)	VERY LOW	CRITICAL

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute		
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): -1.0 (-4 to 0)	22 Median (IQR): -0.5 (0 to 0)	P=0.953	Not calculable	MODERATE	CRITICAL

Change in quality of life: CFQ-R respiratory - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	serious[2]	none	8	6	-	MD 4.63 lower (16.88 lower to 7.62 higher)	VERY LOW	CRITICAL
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): 3.8 (0 to 11)	22 Median (IQR): -4.7 (-1 to 7)	P=0.925	Not calculable	MODERATE	CRITICAL

Change in quality of life: CFQ-R emotional - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	serious[2]	none	8	6	-	MD 7.78 lower (18.65 lower	VERY LOW	CRITICAL

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute		
										to 3.09 higher)		
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): 1.2 (-6 to 6)	22 Median (IQR): -4.3 (-13 to 6)	P=0.458	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R social - *Unsupervised programme* **(follow-up 3 months; range of scores: 0-100; Better indicated by higher values)**												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	serious[2]	none	8	6	-	MD 5.29 lower (18.10 lower to 7.52 higher)	VERY LOW	CRITICAL
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): -1.1 (-11 to 5)	22 Median (IQR): -1.7 (5 to 11)	P=0.953	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R eating disturbances- *Unsupervised programme* **(follow-up 3 months; range of scores: 0-100; Better indicated by higher values)**												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	no serious imprecision	none	8	6		MD -1.39 (4.91 lower	LOW	CRITICAL

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
										to 2.13 higher)		
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): -0.3 (-11 to 6)	22 Median (IQR): -2.0 (-11 to 0)	P=0.913	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R treatment - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	very serious[4]	none	8	6	-	MD 5.56 lower (26.03 lower to 14.91 higher)	VERY LOW	CRITICAL
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): -2.0 (-11 to 0)	22 Median (IQR): -2.5 (-11 to11)	P=0.850	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R vitality - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	very serious[4]	none	8	6	-	MD 3.13 higher	VERY LOW	CRITICAL

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
										(13.45 lower to 19.71 higher)		
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): -1.2 (-16 to 8)	22 Median (IQR): 2.6 (-8 to 10)	P=0.579	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R health - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious 7	no serious inconsistency	no serious indirectness	very serious4	none	8	6	-	MD 5.57 lower (21.75 lower to 10.61 higher)	VERY LOW	CRITICAL
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): 1.7 (-11 to 16)	22 Median (IQR): -3.0 (-11 to 0)	P=0.382	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R weight - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute		
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	very serious[4]	none	8	6	-	MD 8.34 lower (36.73 lower to 20.05 higher)	VERY LOW	CRITICAL
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): 4.6 (0 to 33)	22 Median (IQR): 12.1 (0 to 11)	P=0.410	Not calculable	MODERATE	CRITICAL
Change in quality of life: CFQ-R social limitations - _Unsupervised programme_ (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	serious2	none	8	6	-	MD 5.29 lower (18.10 lower to 7.52 higher)	VERY LOW	CRITICAL
1 (Rovedder 2014)	randomised trials	serious[9]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	19 Median (IQR): 0.8 (-8 to 8)	22 Median (IQR): 1.8 (-2 to 0)	P=0.935	Not calculable	MODERATE	CRITICAL

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
Change in quality of life: CFQ-R role limitations - *Unsupervised programme* (follow-up 3 months; range of scores: 0-100; Better indicated by higher values)												
1 (Beaudoin 2016)	randomised trials	very serious[7]	no serious inconsistency	no serious indirectness	very serious[4]	none	8	6	-	MD 4.52 higher (13.37 lower to 22.41 higher)	VERY LOW	CRITICAL
Change in quality of life- *Supervised programme* (follow-up 2 months; measured with: CFQ-R children's; range of scores: 0-100; Better indicated by higher values)												
1 (Santana-Sosa 2012)	randomised trials	very serious[1] [1]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	11 Median pre-intervention: 696 (495 to 741) Median post-intervention: 719 (550 to 734)	11 Median pre-intervention: 649 (578 to 768) Median post-intervention: 638 (461 to 791)	p=0.257	Not calculable	LOW	CRITICAL

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
Change in quality of life- *Supervised programme* (follow-up 2 months; measured with: CFQ-R parents'; range of scores: 0-100; Better indicated by higher values)												
1 (Santana-Sosa 2012)	randomised trials	very serious[1] [1]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	11 Median pre-intervention: 896 (688 to 1011) Median post-intervention: 889 (811 to 973)	11 Median pre-intervention: 911 (842 to 1028) Median post-intervention: 978 (684 to 1059);	p=0.143	Not calculable	LOW	CRITICAL
Preference for training programme												
No evidence available												
Adverse events - *Unsupervised programme*												
No evidence available												
Adverse events - *Supervised programme* (follow-up 2 months)												
1 (Santana-Sosa 2012)	randomised trials	very serious[1] [1]	no serious inconsistency	no serious indirectness	Not calculable [10]	none	11 No adverse events occurred during	11 No data reported	-	Not calculable	LOW	CRITICAL

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Combined aerobic and anaerobic training programme	No exercise programme	Relative (95% CI)	Absolute	Quality	Importance
							exercise training					

Abbreviations: BMI: body mass index; CI: confidence interval; CF: cystic fibrosis; CFQ-R: cystic fibrosis questionnaire revised; FEV$_1$: forced expiratory volume in 1 second; FVC: forced vital capacity; kg: kilogrammes MD: mean difference; min: minute; ml: millilitres; FEV$_1$ max/ peak: maximal oxygen consumption

1 The quality of the evidence was downgraded by 1 because of unclear risk of bias in relation to the allocation concealment and blinding of participants and personnel across the three studies; high risk of bias in relation to incomplete outcome data and unclear risk of bias in relation to blinding of outcome assessors and selective reporting in 1 study

2 The quality of the evidence was downgraded by 1 because the 95% CI crossed 1 clinical MID

3 The quality of the evidence was downgraded by 2 because of high risk of bias for the random sequence generation and allocation concealment domains and unclear risk of bias for the blinding, outcome assessment and reporting domains

4 The quality of the evidence was downgraded by 2 because the 95% CI crossed 2 clinical MIDs

5 The quality of the evidence was downgraded by 1 because the 95% CI crossed 1 default MID

6 The quality of the evidence was downgraded by 2 because the 95% CI crossed 2 default MIDs

7 The quality of the evidence was downgraded by 2 because of high risk of bias in relation to incomplete outcome data, unclear risk of bias in relation to allocation concealment, selective reporting, blinding of participants and personnel and outcome assessors

8 The quality of the evidence was downgraded by 2 due to unclear risk of bias for the random sequence generation, allocation concealment, blinding and incomplete outcome data domains

9 The quality of the evidence was downgraded by 1 because of unclear risk of bias for the domains allocation concealment and blinding.

10 Imprecision cannot be calculated, as results are provided as medians

11 The quality of the evidence was downgraded by 2 because of high risk of bias for incomplete outcome data, and unclear risk of bias for random sequence generation, allocation concealment and blinding