

2.1 LVED

Study or Subgroup	Experimental			Control			Weight	Mean Difference IV, Random, 95% CI	Mean Difference IV, Random, 95% CI	A B
	Mean	SD	Total	Mean	SD	Total				
2.1.1 Mild										
Cicek 2011	41.9	3.9	26	43.5	4.4	26	2.7%	-1.60 [-3.86, 0.66]		
Wachter 2011	50	5	140	50	6	136	7.3%	0.00 [-1.30, 1.30]		
Subtotal (95% CI)			166			162	10.1%	-0.52 [-1.99, 0.95]		
Heterogeneity: Tau ² = 0.39; Chi ² = 1.44, df = 1 (P = 0.23); I ² = 31%										
Test for overall effect: Z = 0.70 (P = 0.49)										
2.1.2 Mild to Moderate										
Cicek 2011	41.7261	4.8154	46	43.5	4.4	26	2.9%	-1.77 [-3.96, 0.42]		
Kawanishi 2007	49	4	19	49	3	12	2.3%	0.00 [-2.47, 2.47]		
Kim 2008	50	1	18	50	1	24	21.3%	0.00 [-0.61, 0.61]		
Wachter 2011	0	0	0	0	0	0		Not estimable		
Subtotal (95% CI)			83			62	26.5%	-0.23 [-1.05, 0.60]		
Heterogeneity: Tau ² = 0.13; Chi ² = 2.35, df = 2 (P = 0.31); I ² = 15%										
Test for overall effect: Z = 0.54 (P = 0.59)										
2.1.3 Moderate to Severe										
Cicek 2011	42.1	5.3435	40	43.5	4.4	26	2.5%	-1.40 [-3.77, 0.97]		
Wachter 2011	52	7	76	50	6	136	3.9%	2.00 [0.13, 3.87]		
Subtotal (95% CI)			116			162	6.4%	0.38 [-2.95, 3.71]		
Heterogeneity: Tau ² = 4.60; Chi ² = 4.88, df = 1 (P = 0.03); I ² = 80%										
Test for overall effect: Z = 0.22 (P = 0.82)										
2.1.4 Severe										
Cicek 2011	42.7	4.8	20	43.5	4.4	26	2.0%	-0.80 [-3.50, 1.90]		
Kawanishi 2007	50	5	19	49	3	12	1.8%	1.00 [-1.82, 3.82]		
Kim 2008	50	1	20	50	1	24	21.9%	0.00 [-0.59, 0.59]		
Subtotal (95% CI)			59			62	25.7%	0.01 [-0.56, 0.57]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.82, df = 2 (P = 0.66); I ² = 0%										
Test for overall effect: Z = 0.02 (P = 0.99)										
2.1.5 Mild to Mod Vs Severe										
Cicek 2011	42.7	4.8	20	41.7261	4.8154	46	2.2%	0.97 [-1.55, 3.50]		
Kawanishi 2007	50	5	19	49	4	19	1.7%	1.00 [-1.88, 3.88]		
Kim 2008	50	1	20	50	1	18	20.3%	0.00 [-0.64, 0.64]		
Subtotal (95% CI)			59			83	24.3%	0.10 [-0.50, 0.70]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.93, df = 2 (P = 0.63); I ² = 0%										
Test for overall effect: Z = 0.32 (P = 0.75)										
2.1.6 Mild Vs Mod to Severe										
Cicek 2011	42.1	5.3435	40	41.9	3.9	26	2.8%	0.20 [-2.03, 2.43]		
Wachter 2011	52	7	76	50	5	140	4.3%	2.00 [0.22, 3.78]		
Subtotal (95% CI)			116			166	7.1%	1.23 [-0.51, 2.98]		
Heterogeneity: Tau ² = 0.56; Chi ² = 1.53, df = 1 (P = 0.22); I ² = 35%										
Test for overall effect: Z = 1.38 (P = 0.17)										
Total (95% CI)										
			599			697	100.0%	0.08 [-0.31, 0.47]		
Heterogeneity: Tau ² = 0.08; Chi ² = 16.80, df = 14 (P = 0.27); I ² = 17%										
Test for overall effect: Z = 0.40 (P = 0.69)										
Test for subgroup differences: Chi ² = 2.84, df = 5 (P = 0.72), I ² = 0%										

-20 -10 0 10 20
OSA Control

Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

2.2 IVSD

Study or Subgroup	OSA Difference			Control			Weight	Mean IV, Random, 95% CI	Mean Difference IV, Random, 95% CI	Risk
	Mean	SD	Total	Mean	SD	Total				
2.2.1 Mild										
Altekin 2012	1.03	0.1	20	0.89	0.9	21	0.2%	0.14 [-0.25, 0.53]		A B C
Cicek 2011	1.1	0.1	26	1.1	0.2	26	3.8%	0.00 [-0.09, 0.09]		
Wachter 2011	1.22	0.19	140	1.17	0.16	136	16.4%	0.05 [0.01, 0.09]		
Subtotal (95% CI)			186			183	20.5%	0.04 [0.00, 0.08]		
Heterogeneity: Tau ² = 0.00; Chi ² = 1.31, df = 2 (P = 0.52); I ² = 0%										
Test for overall effect: Z = 2.19 (P = 0.03)										
2.2.2 Mild to Mod										
Altekin 2012	1.03	0.114	39	0.89	0.9	21	0.2%	0.14 [-0.25, 0.53]		A B C
Cicek 2011	1.15	0.1645	52	1.1	0.2	26	3.5%	0.05 [-0.04, 0.14]		
Kawanishi 2007	0.9	0.1	19	0.9	0.1	12	5.4%	0.00 [-0.07, 0.07]		
Subtotal (95% CI)			110			59	9.1%	0.02 [-0.03, 0.08]		
Heterogeneity: Tau ² = 0.00; Chi ² = 1.09, df = 2 (P = 0.58); I ² = 0%										
Test for overall effect: Z = 0.79 (P = 0.43)										
2.2.3 Moderate										
Altekin 2012	1.03	0.13	19	0.89	0.9	21	0.2%	0.14 [-0.25, 0.53]		A B C
Cicek 2011	1.2	0.2	20	1.1	0.2	26	2.1%	0.10 [-0.02, 0.22]		
Subtotal (95% CI)			39			47	2.2%	0.10 [-0.01, 0.21]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.04, df = 1 (P = 0.85); I ² = 0%										
Test for overall effect: Z = 1.81 (P = 0.07)										
2.2.5 Severe										
Altekin 2012	1.13	0.13	19	0.89	0.9	0		Not estimable		A B C
Cicek 2011	1.2	0.2	20	1.1	0.2	26	2.1%	0.10 [-0.02, 0.22]		
Kawanishi 2007	1	0.1	19	0.9	0.1	12	5.4%	0.10 [0.03, 0.17]		
Subtotal (95% CI)			58			38	7.4%	0.10 [0.04, 0.16]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.00, df = 1 (P = 1.00); I ² = 0%										
Test for overall effect: Z = 3.19 (P = 0.001)										
2.2.6 Mod to Severe										
Altekin 2012	1.08	0.1379	38	0.89	0.9	21	0.2%	0.19 [-0.20, 0.58]		A B C
Cicek 2011	1.2	0.1974	40	1.1	0.2	26	2.9%	0.10 [0.00, 0.20]		
Wachter 2011	1.24	0.18	76	1.17	0.16	136	11.9%	0.07 [0.02, 0.12]		
Subtotal (95% CI)			154			183	15.0%	0.08 [0.03, 0.12]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.62, df = 2 (P = 0.73); I ² = 0%										
Test for overall effect: Z = 3.50 (P = 0.0005)										
2.2.7 Mild Vs Severe										
Altekin 2012	1.13	0.13	19	1.03	0.1	20	5.3%	0.10 [0.03, 0.17]		A B C
Cicek 2011	1.2	0.2	20	1.1	0.1	26	3.1%	0.10 [0.00, 0.20]		
Subtotal (95% CI)			39			46	8.3%	0.10 [0.04, 0.16]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.00, df = 1 (P = 1.00); I ² = 0%										
Test for overall effect: Z = 3.37 (P = 0.0007)										
2.2.8 Mild to Mod Vs Severe										
Altekin 2012	1.13	0.13	19	1.03	0.114	39	6.0%	0.10 [0.03, 0.17]		A B C
Cicek 2011	1.2	0.2	20	1.15	0.1645	52	2.9%	0.05 [-0.05, 0.15]		
Kawanishi 2007	1	0.1	12	0.9	0.1	19	5.4%	0.10 [0.03, 0.17]		
Subtotal (95% CI)			51			110	14.2%	0.09 [0.05, 0.13]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.79, df = 2 (P = 0.67); I ² = 0%										
Test for overall effect: Z = 3.97 (P < 0.0001)										
2.2.9 Mild Vs Mod to Severe										
Altekin 2012	1.08	0.1379	38	1.03	0.1	20	7.3%	0.05 [-0.01, 0.11]		A B C
Cicek 2011	1.2	0.1974	40	1.1	0.1	26	5.4%	0.10 [0.03, 0.17]		
Wachter 2011	1.24	0.18	76	1.22	0.19	140	10.7%	0.02 [-0.03, 0.07]		
Subtotal (95% CI)			154			186	23.3%	0.05 [0.01, 0.10]		

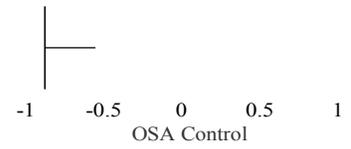
Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 3.14$, $df = 2$ ($P = 0.21$); $I^2 = 36\%$
Test for overall effect: $Z = 2.26$ ($P = 0.02$)

Total (95% CI) 791 852 100.0% 0.06 [0.05, 0.08]

Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 16.33$, $df = 20$ ($P = 0.70$); $I^2 = 0\%$

Test for overall effect: $Z = 7.50$ ($P < 0.00001$)

Test for subgroup differences: $\chi^2 = 8.78$, $df = 7$ ($P = 0.27$), $I^2 = 20.3\%$



Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias



2.3 PWD

Study or Subgroup	OSA			Control			Weight	Mean Difference IV, Random, 95% CI	Mean Difference IV, Random, 95% CI	Ris A B C
	Mean	SD	Total	Mean	SD	Total				
2.3.1 Mild										
Altekin 2012	1.03	0.09	20	0.88	0.07	21	5.0%	0.15 [0.10, 0.20]		
Cicek 2011	1	0.1	26	0.9	0.2	26	4.1%	0.10 [0.01, 0.19]		
Wachter 2011	1.12	0.14	140	1.08	0.14	136	5.4%	0.04 [0.01, 0.07]		
Subtotal (95% CI)			186			183	14.5%	0.09 [0.02, 0.17]		
Heterogeneity: Tau ² = 0.00; Chi ² = 13.44, df = 2 (P = 0.001); I ² = 85%										
Test for overall effect: Z = 2.37 (P = 0.02)										
2.3.2 Mild to Mod										
Altekin 2012	1.0349	0.1044	39	0.88	0.07	20	5.1%	0.15 [0.11, 0.20]		
Cicek 2011	1.0435	0.158	46	0.9	0.2	26	4.0%	0.14 [0.05, 0.23]		
Kawanishi 2007	0.9	0.1	19	0.9	0.1	12	4.5%	0.00 [-0.07, 0.07]		
Subtotal (95% CI)			104			58	13.7%	0.10 [0.00, 0.20]		
Heterogeneity: Tau ² = 0.01; Chi ² = 13.14, df = 2 (P = 0.001); I ² = 85%										
Test for overall effect: Z = 1.97 (P = 0.05)										
2.3.3 Moderate										
Altekin 2012	1.04	0.12	19	0.88	0.07	21	4.7%	0.16 [0.10, 0.22]		
Cicek 2011	1.1	0.2	20	0.9	0.2	26	3.4%	0.20 [0.08, 0.32]		
Subtotal (95% CI)			39			47	8.1%	0.17 [0.11, 0.22]		
Heterogeneity: Tau ² = 0.00; Chi ² = 0.35, df = 1 (P = 0.55); I ² = 0%										
Test for overall effect: Z = 6.06 (P < 0.00001)										
2.3.4 Moderate to Severe										
Altekin 2012	1.075	0.1284	38	0.88	0.07	21	5.0%	0.19 [0.14, 0.25]		
Cicek 2011	1.05	0.1641	40	0.9	0.2	26	4.0%	0.15 [0.06, 0.24]		
Wachter 2011	1.13	0.14	76	1.08	0.14	136	5.2%	0.05 [0.01, 0.09]		
Subtotal (95% CI)			154			183	14.2%	0.13 [0.03, 0.23]		
Heterogeneity: Tau ² = 0.01; Chi ² = 20.50, df = 2 (P < 0.0001); I ² = 90%										
Test for overall effect: Z = 2.44 (P = 0.01)										
2.3.5 Severe										
Altekin 2012	1.11	0.13	19	0.88	0.07	21	4.6%	0.23 [0.16, 0.30]		
Cicek 2011	1	0.1	20	0.9	0.2	26	4.1%	0.10 [0.01, 0.19]		
Kawanishi 2007	1	0.2	19	0.9	0.1	12	3.6%	0.10 [-0.01, 0.21]		
Subtotal (95% CI)			58			59	12.3%	0.15 [0.05, 0.24]		
Heterogeneity: Tau ² = 0.00; Chi ² = 7.26, df = 2 (P = 0.03); I ² = 72%										
Test for overall effect: Z = 3.10 (P = 0.002)										
2.3.6 Mild Vs Severe										
Altekin 2012	1.11	0.13	19	1.03	0.09	20	4.5%	0.08 [0.01, 0.15]		
Cicek 2011	1	0.1	20	1	0.1	26	4.8%	0.00 [-0.06, 0.06]		
Subtotal (95% CI)			39			46	9.4%	0.04 [-0.04, 0.12]		
Heterogeneity: Tau ² = 0.00; Chi ² = 2.94, df = 1 (P = 0.09); I ² = 66%										
Test for overall effect: Z = 0.94 (P = 0.35)										
2.3.7 Mild to Mod Vs Severe										
Altekin 2012	1.11	0.13	19	1.075	0.1284	38	4.5%	0.04 [-0.04, 0.11]		
Cicek 2011	1	0.1	20	1.05	0.1641	40	4.6%	-0.05 [-0.12, 0.02]		
Kawanishi 2007	1	0.2	19	1.13	0.14	76	3.9%	-0.13 [-0.23, -0.03]		
Subtotal (95% CI)			58			154	13.0%	-0.04 [-0.13, 0.04]		
Heterogeneity: Tau ² = 0.00; Chi ² = 7.71, df = 2 (P = 0.02); I ² = 74%										
Test for overall effect: Z = 0.99 (P = 0.32)										
2.3.8 Mild Vs Mod to Severe										
Altekin 2012	1.075	0.13	38	1.03	0.09	20	4.9%	0.04 [-0.01, 0.10]		
Cicek 2011	1.05	0.16	40	1	0.1	26	4.7%	0.05 [-0.01, 0.11]		
Wachter 2011	1.13	0.14	76	1.12	0.14	140	5.2%	0.01 [-0.03, 0.05]		
Subtotal (95% CI)			154			186	14.8%	0.03 [-0.00, 0.06]		
Heterogeneity: Tau ² = 0.00; Chi ² = 1.62, df = 2 (P = 0.44); I ² = 0%										
Test for overall effect: Z = 1.86 (P = 0.06)										

Total (95% CI) 792 916 100.0% 0.08 [0.05, 0.12]

Heterogeneity: $\tau^2 = 0.01$; $\chi^2 = 142.22$, $df = 21$ ($P < 0.00001$); $I^2 = 85\%$

Test for overall effect: $Z = 4.73$ ($P < 0.00001$)

Test for subgroup differences: $\chi^2 = 32.55$, $df = 7$ ($P < 0.0001$), $I^2 = 78.5\%$

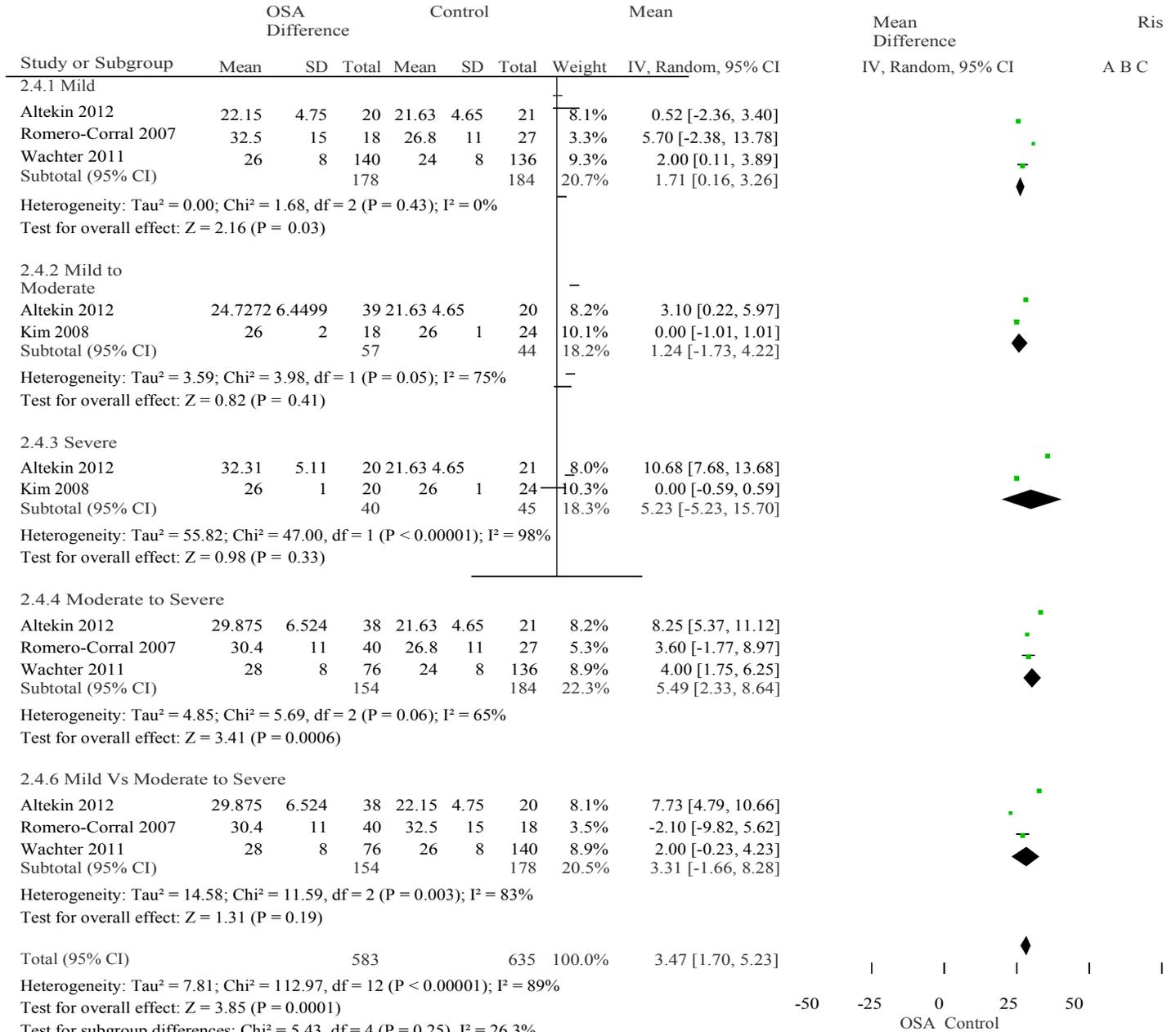


Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias



2.4 LAVI



Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

2.5 E/A ratio

Study or Subgroup	Experimental			Control			Weight	Mean Difference IV, Random, 95% CI	Mean Difference IV, Random, 95% CI	R A B
	Mean	SD	Total	Mean	SD	Total				
2.5.1 Mild										
Altekin 2012	0.96	0.16	20	1.19	0.24	21	2.7%	-0.23 [-0.35, -0.11]		
Cicek 2011	1.3	0.3	20	1.7	0.4	26	2.1%	-0.40 [-0.60, -0.20]		
Romero-Corral 2007	1.5	1	18	1.21	0.57	27	0.7%	0.29 [-0.22, 0.80]		
Wachter 2011	1	0.3	140	1	0.3	136	3.1%	0.00 [-0.07, 0.07]		
Yang 2011	1.15	0.06	77	1.29	0.14	75	3.3%	-0.14 [-0.17, -0.11]		
Subtotal (95% CI)			275			285	12.0%	-0.14 [-0.26, -0.03]		
Heterogeneity: Tau ² = 0.01; Chi ² = 25.09, df = 4 (P < 0.0001); I ² = 84%										
Test for overall effect: Z = 2.42 (P = 0.02)										
2.5.2 Moderate										
Altekin 2012	1.01	0.3	19	1.19	0.24	21	2.4%	-0.18 [-0.35, -0.01]		
Cicek 2011	0.9	0.4	20	1.7	0.4	26	1.9%	-0.80 [-1.03, -0.57]		
Yang 2011	0.94	0.18	81	1.29	0.14	75	3.2%	-0.35 [-0.40, -0.30]		
Subtotal (95% CI)			120			122	7.5%	-0.42 [-0.68, -0.17]		
Heterogeneity: Tau ² = 0.04; Chi ² = 18.12, df = 2 (P = 0.0001); I ² = 89%										
Test for overall effect: Z = 3.28 (P = 0.001)										
2.5.3 Severe										
Altekin 2012	1.11	0.28	19	1.19	0.24	21	2.4%	-0.08 [-0.24, 0.08]		
Cicek 2011	0.8	0.4	20	1.7	0.4	26	1.9%	-0.90 [-1.13, -0.67]		
Kawanishi 2007	0.99	0.47	19	1.1	0.61	12	1.0%	-0.11 [-0.51, 0.29]		
Kim 2008	1.1	0.1	20	1.2	0.1	24	3.2%	-0.10 [-0.16, -0.04]		
Yang 2011	0.83	0.09	62	1.29	0.14	75	3.2%	-0.46 [-0.50, -0.42]		
Subtotal (95% CI)			140			158	11.8%	-0.33 [-0.58, -0.09]		
Heterogeneity: Tau ² = 0.07; Chi ² = 132.39, df = 4 (P < 0.00001); I ² = 97%										
Test for overall effect: Z = 2.66 (P = 0.008)										
2.5.4 Mild to Moderate										
Altekin 2012	0.9844	0.2368	39	1.19	0.24	21	2.7%	-0.21 [-0.33, -0.08]		
Cicek 2011	1.1261	0.3972	46	1.7	0.4	26	2.2%	-0.57 [-0.77, -0.38]		
Kawanishi 2007	0.95	0.25	19	1.1	0.61	12	1.2%	-0.15 [-0.51, 0.21]		
Kim 2008	1.1	0.1	18	1.2	0.1	24	3.1%	-0.10 [-0.16, -0.04]		
Yang 2011	1.0423	0.1713	158	1.29	0.14	75	3.2%	-0.25 [-0.29, -0.21]		
Subtotal (95% CI)			280			158	12.5%	-0.25 [-0.37, -0.13]		
Heterogeneity: Tau ² = 0.01; Chi ² = 29.54, df = 4 (P < 0.00001); I ² = 86%										
Test for overall effect: Z = 4.02 (P < 0.0001)										
2.5.5 Moderate to Severe										
Altekin 2012	1.06	0.2907	38	1.19	0.24	19	2.6%	-0.13 [-0.27, 0.01]		
Cicek 2011	0.85	2.8063	40	1.7	0.4	26	0.3%	-0.85 [-1.73, 0.03]		
Romero-Corral 2007	1.21	0.75	40	1.21	0.57	27	1.4%	0.00 [-0.32, 0.32]		
Wachter 2011	1	0.4	76	1	0.3	136	2.9%	0.00 [-0.10, 0.10]		
Yang 2011	0.8923	0.1572	143	1.29	0.14	75	3.2%	-0.40 [-0.44, -0.36]		
Subtotal (95% CI)			337			283	10.4%	-0.19 [-0.43, 0.06]		
Heterogeneity: Tau ² = 0.06; Chi ² = 62.98, df = 4 (P < 0.00001); I ² = 94%										
Test for overall effect: Z = 1.50 (P = 0.13)										
2.5.6 Mild Vs Moderate										
Altekin 2012	1.01	0.3	19	0.96	0.16	20	2.5%	0.05 [-0.10, 0.20]		
Cicek 2011	0.9	0.4	20	1.3	0.3	20	2.0%	-0.40 [-0.62, -0.18]		
Yang 2011	0.94	0.18	81	1.15	0.06	77	3.2%	-0.21 [-0.25, -0.17]		
Subtotal (95% CI)			120			117	7.8%	-0.18 [-0.38, 0.02]		
Heterogeneity: Tau ² = 0.03; Chi ² = 13.81, df = 2 (P = 0.001); I ² = 86%										
Test for overall effect: Z = 1.72 (P = 0.09)										
2.5.7 Mild Vs Severe										
Altekin 2012	1.11	0.28	19	0.96	0.16	20	2.6%	0.15 [0.01, 0.29]		
Cicek 2011	0.8	0.4	20	1.3	0.3	20	2.0%	-0.50 [-0.72, -0.28]		
Yang 2011	0.83	0.09	62	1.15	0.06	77	3.3%	-0.32 [-0.35, -0.29]		

Subtotal (95% CI)	101	117	7.9%	-0.22 [-0.55, 0.11]
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Heterogeneity: $\text{Tau}^2 = 0.08$; $\text{Chi}^2 = 42.56$, $\text{df} = 2$ ($P < 0.00001$); $I^2 = 95\%$
 Test for overall effect: $Z = 1.30$ ($P = 0.19$)

2.5.8 Moderate Vs Severe

Altekin 2012	1.11	0.28	19	1.01	0.3	19	2.3%	0.10 [-0.08, 0.28]
Cicek 2011	0.8	0.4	20	0.9	0.4	20	1.8%	-0.10 [-0.35, 0.15]
Yang 2011	0.83	0.09	62	0.94	0.18	81	3.2%	-0.11 [-0.16, -0.06]
Subtotal (95% CI)			101			120	7.3%	-0.05 [-0.18, 0.08]

Heterogeneity: $\text{Tau}^2 = 0.01$; $\text{Chi}^2 = 4.69$, $\text{df} = 2$ ($P = 0.10$); $I^2 = 57\%$
 Test for overall effect: $Z = 0.74$ ($P = 0.46$)

2.5.9 Mild to Mod Vs Severe

Altekin 2012	1.11	0.28	19	0.9844	0.2368	39	2.6%	0.13 [-0.02, 0.27]
Cicek 2011	0.8	0.4	20	1.1261	0.3972	46	2.1%	-0.33 [-0.54, -0.12]
Kawanishi 2007	0.99	0.47	19	0.95	0.25	19	1.9%	0.04 [-0.20, 0.28]
Kim 2008	1.1	0.1	20	1.1	0.1	18	3.1%	0.00 [-0.06, 0.06]
Yang 2011	0.83	0.09	62	1.0423	0.1713	158	3.3%	-0.21 [-0.25, -0.18]
Subtotal (95% CI)			140			280	12.9%	-0.07 [-0.23, 0.08]

Heterogeneity: $\text{Tau}^2 = 0.02$; $\text{Chi}^2 = 52.35$, $\text{df} = 4$ ($P < 0.00001$); $I^2 = 92\%$
 Test for overall effect: $Z = 0.97$ ($P = 0.33$)

2.5.10 Mild Vs Mod to Severe

Altekin 2012	1.06	0.2907	38	0.96	0.16	20	2.8%	0.10 [-0.02, 0.22]
Cicek 2011	0.85	2.8063	40	1.3	0.3	20	0.3%	-0.45 [-1.33, 0.43]
Romero-Corral 2007	1.21	0.75	40	1.5	1	18	0.7%	-0.29 [-0.81, 0.23]
Wachter 2011	1	0.4	76	1	0.3	140	2.9%	0.00 [-0.10, 0.10]
Yang 2011	0.8923	0.1572	143	1.15	0.06	77	3.3%	-0.26 [-0.29, -0.23]
Subtotal (95% CI)			337			275	10.0%	-0.10 [-0.32, 0.11]

Heterogeneity: $\text{Tau}^2 = 0.04$; $\text{Chi}^2 = 53.64$, $\text{df} = 4$ ($P < 0.00001$); $I^2 = 93\%$
 Test for overall effect: $Z = 0.93$ ($P = 0.35$)

Total (95% CI) 1951 1915 100.0% -0.19 [-0.24, -0.14]

Heterogeneity: $\text{Tau}^2 = 0.02$; $\text{Chi}^2 = 695.79$, $\text{df} = 41$ ($P < 0.00001$); $I^2 = 94\%$

Test for overall effect: $Z = 7.44$ ($P < 0.00001$)

Test for subgroup differences: $\text{Chi}^2 = 12.29$, $\text{df} = 9$ ($P = 0.20$), $I^2 = 26.8\%$

Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias



2.6 Dec Time

Study or Subgroup	OSA			Control			Weight	Mean Difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total		
2.6.1 Mild								
Altekin 2012	227.35	31.1	20	163	26.2	21	4.4%	64.35 [46.71, 81.99]
Cicek 2011	212.5	41.5	26	205.3	32.1	26	4.2%	7.20 [-12.97, 27.37]
Romero-Corral 2007	216	32	18	201	42	27	4.1%	15.00 [-6.67, 36.67]
Wachter 2011	257	76	140	240	69	136	4.4%	17.00 [-0.12, 34.12]
Subtotal (95% CI)			204			210	17.1%	26.18 [-0.36, 52.72]

Heterogeneity: $\tau^2 = 637.65$; $\chi^2 = 23.36$, $df = 3$ ($P < 0.0001$); $I^2 = 87\%$
 Test for overall effect: $Z = 1.93$ ($P = 0.05$)

2.6.2 Mild to Moderate

Altekin 2012	221.991	47.3572	39	163	26.2	21	4.3%	58.99 [40.38, 77.60]
Cicek 2011	217.3261	47.3483	46	205.3	32.1	26	4.3%	12.03 [-6.40, 30.45]
Kawanishi 2007	191	38	19	174	24	12	4.1%	17.00 [-4.83, 38.83]
Kim 2008	208	10	18	193	8	24	5.0%	15.00 [9.38, 20.62]
Subtotal (95% CI)			122			83	17.7%	25.26 [5.72, 44.80]

Heterogeneity: $\tau^2 = 324.80$; $\chi^2 = 20.13$, $df = 3$ ($P = 0.0002$); $I^2 = 85\%$
 Test for overall effect: $Z = 2.53$ ($P = 0.01$)

2.6.4 Moderate to Severe

Altekin 2012	207.855	51.068	38	163	26.2	21	4.2%	44.85 [25.13, 64.58]
Cicek 2011	234.6	59.7735	40	205.3	32.1	26	4.1%	29.30 [7.04, 51.56]
Romero-Corral 2007	208	57	40	201	42	27	3.9%	7.00 [-16.73, 30.73]
Wachter 2011	253	70	136	240	69	76	4.3%	13.00 [-6.47, 32.47]
Subtotal (95% CI)			254			150	16.5%	23.98 [7.00, 40.96]

Heterogeneity: $\tau^2 = 182.72$; $\chi^2 = 7.70$, $df = 3$ ($P = 0.05$); $I^2 = 61\%$
 Test for overall effect: $Z = 2.77$ ($P = 0.006$)

2.6.5 Severe

Altekin 2012	199.36	39.5	19	163	26.2	21	4.1%	36.36 [15.36, 57.36]
Cicek 2011	245.6	64.1	20	205.3	32.1	26	3.4%	40.30 [9.62, 70.98]
Kawanishi 2007	211	50	19	174	24	12	3.8%	37.00 [10.74, 63.26]
Kim 2008	184	8	20	193	8	24	5.0%	-9.00 [-13.75, -4.25]
Subtotal (95% CI)			78			83	16.3%	24.61 [-7.67, 56.89]

Heterogeneity: $\tau^2 = 956.09$; $\chi^2 = 35.77$, $df = 3$ ($P < 0.00001$); $I^2 = 92\%$
 Test for overall effect: $Z = 1.49$ ($P = 0.14$)

2.6.9 Mild Vs moderate to severe

Altekin 2012	207.855	51.068	38	227.35	31.1	20	4.1%	-19.50 [-40.69, 1.70]
Cicek 2011	234.6	59.7735	40	212.5	41.5	26	3.9%	22.10 [-2.35, 46.55]
Romero-Corral 2007	208	57	40	216	32	18	4.0%	-8.00 [-31.03, 15.03]
Wachter 2011	253	70	136	257	76	140	4.4%	-4.00 [-21.23, 13.23]
Subtotal (95% CI)			254			204	16.4%	-3.12 [-18.83, 12.58]

Heterogeneity: $\tau^2 = 138.25$; $\chi^2 = 6.55$, $df = 3$ ($P = 0.09$); $I^2 = 54\%$
 Test for overall effect: $Z = 0.39$ ($P = 0.70$)

2.6.10 Mild to Moderate vs Severe

Altekin 2012	199.36	39.5	19	221.991	47.3572	39	4.0%	-22.63 [-45.79, 0.53]
Cicek 2011	245.6	64.1	20	217.3261	47.3483	46	3.4%	28.27 [-2.97, 59.52]
Kawanishi 2007	211	50	19	191	38	19	3.6%	20.00 [-8.24, 48.24]
Kim 2008	184	8	20	208	10	18	5.0%	-24.00 [-29.80, -18.20]
Subtotal (95% CI)			78			122	16.0%	-2.50 [-27.99, 22.98]

Heterogeneity: $\tau^2 = 537.40$; $\chi^2 = 18.69$, $df = 3$ ($P = 0.0003$); $I^2 = 84\%$
 Test for overall effect: $Z = 0.19$ ($P = 0.85$)

Total (95% CI)			990			852	100.0%	15.88 [5.83, 25.94]
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Heterogeneity: $\tau^2 = 520.40$; $\chi^2 = 274.65$, $df = 23$ ($P < 0.00001$); $I^2 = 92\%$
 Test for overall effect: $Z = 3.10$ ($P = 0.002$)

Test for subgroup differences: $\chi^2 = 10.00$, $df = 5$ ($P = 0.08$), $I^2 = 50.0\%$

Risk of bias legend

(A) Random sequence generation (selection bias)

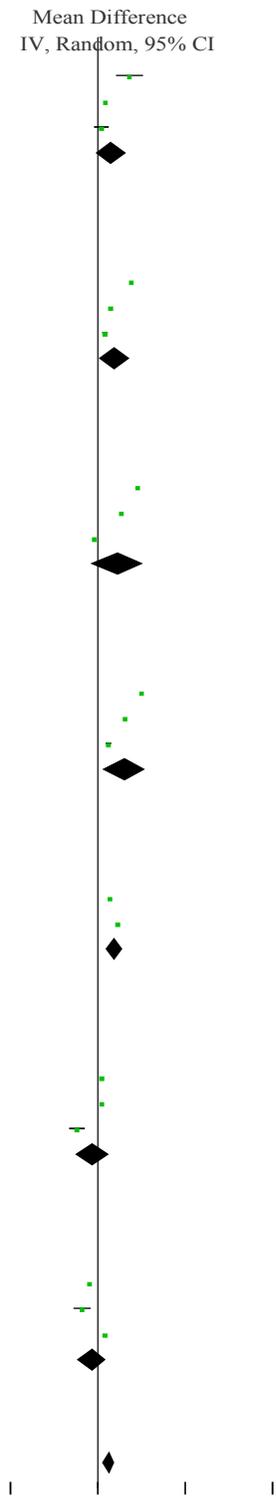
Mean Difference
IV, Random, 95% CI

-100 -50 0 50 100
OSA Control

-
- (B) Allocation concealment (selection bias)
 - (C) Blinding of participants and personnel (performance bias)
 - (D) Blinding of outcome assessment (detection bias)
 - (E) Incomplete outcome data (attrition bias)
 - (F) Selective reporting (reporting bias)
 - (G) Other bias

2.7 IVRT

Study or Subgroup	OSA			Control			Weight	Mean Difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total		
2.7.1 Mild								
Altekin 2012	106.3	12.83	20	88.29	12.49	21	4.4%	18.01 [10.25, 25.77]
Cicek 2011	95.6	9.4	26	91.3	13.6	26	4.8%	4.30 [-2.05, 10.65]
Wachter 2011	100	19	140	98	17	136	5.3%	2.00 [-2.25, 6.25]
Subtotal (95% CI)			186			183	14.6%	7.63 [-1.13, 16.39]
Heterogeneity: Tau ² = 49.98; Chi ² = 12.73, df = 2 (P = 0.002); I ² = 84%								
Test for overall effect: Z = 1.71 (P = 0.09)								
2.7.2 Mild to Moderate								
Altekin 2012	107.5374	9.3792	39	88.29	12.49	21	4.9%	19.25 [13.15, 25.35]
Cicek 2011	98.5565	10.706	46	91.3	13.6	26	4.9%	7.26 [1.18, 13.33]
Kim 2008	82	3	18	78	2	24	5.8%	4.00 [2.40, 5.60]
Subtotal (95% CI)			103			71	15.5%	9.85 [0.95, 18.76]
Heterogeneity: Tau ² = 55.62; Chi ² = 22.97, df = 2 (P < 0.0001); I ² = 91%								
Test for overall effect: Z = 2.17 (P = 0.03)								
2.7.3 Moderate to Severe								
Altekin 2012	111.05	7.8713	38	88.29	12.49	21	4.9%	22.76 [16.86, 28.66]
Cicek 2011	104.7	10.9233	40	91.3	13.6	26	4.8%	13.40 [7.17, 19.63]
Wachter 2011	96	19	76	98	17	136	5.1%	-2.00 [-7.14, 3.14]
Subtotal (95% CI)			154			183	14.9%	11.33 [-3.51, 26.16]
Heterogeneity: Tau ² = 163.16; Chi ² = 40.06, df = 2 (P < 0.00001); I ² = 95%								
Test for overall effect: Z = 1.50 (P = 0.13)								
2.7.4 Severe								
Altekin 2012	113.26	10.42	19	88.29	12.49	21	4.6%	24.97 [17.86, 32.08]
Cicek 2011	107	10.3	20	91.3	13.6	26	4.7%	15.70 [8.79, 22.61]
Kim 2008	84	3	20	78	2	24	5.8%	6.00 [4.46, 7.54]
Subtotal (95% CI)			59			71	15.0%	15.19 [3.24, 27.14]
Heterogeneity: Tau ² = 103.15; Chi ² = 32.17, df = 2 (P < 0.00001); I ² = 94%								
Test for overall effect: Z = 2.49 (P = 0.01)								
2.7.5 Mild Vs Severe								
Altekin 2012	113.26	10.42	19	106.3	12.83	20	4.6%	6.96 [-0.36, 14.28]
Cicek 2011	107	10.3	20	95.6	9.4	26	5.0%	11.40 [5.62, 17.18]
Subtotal (95% CI)			39			46	9.5%	9.69 [5.16, 14.23]
Heterogeneity: Tau ² = 0.00; Chi ² = 0.87, df = 1 (P = 0.35); I ² = 0%								
Test for overall effect: Z = 4.19 (P < 0.0001)								
2.7.6 Mild to Mod vs severe								
Altekin 2012	113.26	10.42	19	111.05	7.8713	38	5.1%	2.21 [-3.10, 7.52]
Cicek 2011	107	10.3	20	104.7	10.9233	40	5.0%	2.30 [-3.34, 7.94]
Kim 2008	84	3	20	96	19	76	5.3%	-12.00 [-16.47, -7.53]
Subtotal (95% CI)			59			154	15.4%	-2.61 [-12.49, 7.28]
Heterogeneity: Tau ² = 69.39; Chi ² = 22.34, df = 2 (P < 0.0001); I ² = 91%								
Test for overall effect: Z = 0.52 (P = 0.61)								
2.7.7 Mild vs Moderate to Severe								
Altekin 2012	106.3	12.83	20	111.05	7.8713	38	4.9%	-4.75 [-10.90, 1.40]
Cicek 2011	95.6	9.4	26	104.7	10.9233	40	5.2%	-9.10 [-14.05, -4.15]
Wachter 2011	100	19	140	96	19	76	5.1%	4.00 [-1.31, 9.31]
Subtotal (95% CI)			186			154	15.1%	-3.30 [-11.24, 4.65]
Heterogeneity: Tau ² = 41.48; Chi ² = 12.75, df = 2 (P = 0.002); I ² = 84%								
Test for overall effect: Z = 0.81 (P = 0.42)								
Total (95% CI)			786			862	100.0%	6.51 [3.18, 9.84]
Heterogeneity: Tau ² = 49.38; Chi ² = 229.29, df = 19 (P < 0.00001); I ² = 92%								
Test for overall effect: Z = 3.84 (P = 0.0001)								
Test for subgroup differences: Chi ² = 13.98, df = 6 (P = 0.03), I ² = 57.1%								



Risk of bias legend

-100 -50 0 50 100
OSA Control

-
- (A) Random sequence generation (selection bias)
 - (B) Allocation concealment (selection bias)
 - (C) Blinding of participants and personnel (performance bias)
 - (D) Blinding of outcome assessment (detection bias)
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 - (G) Other bias

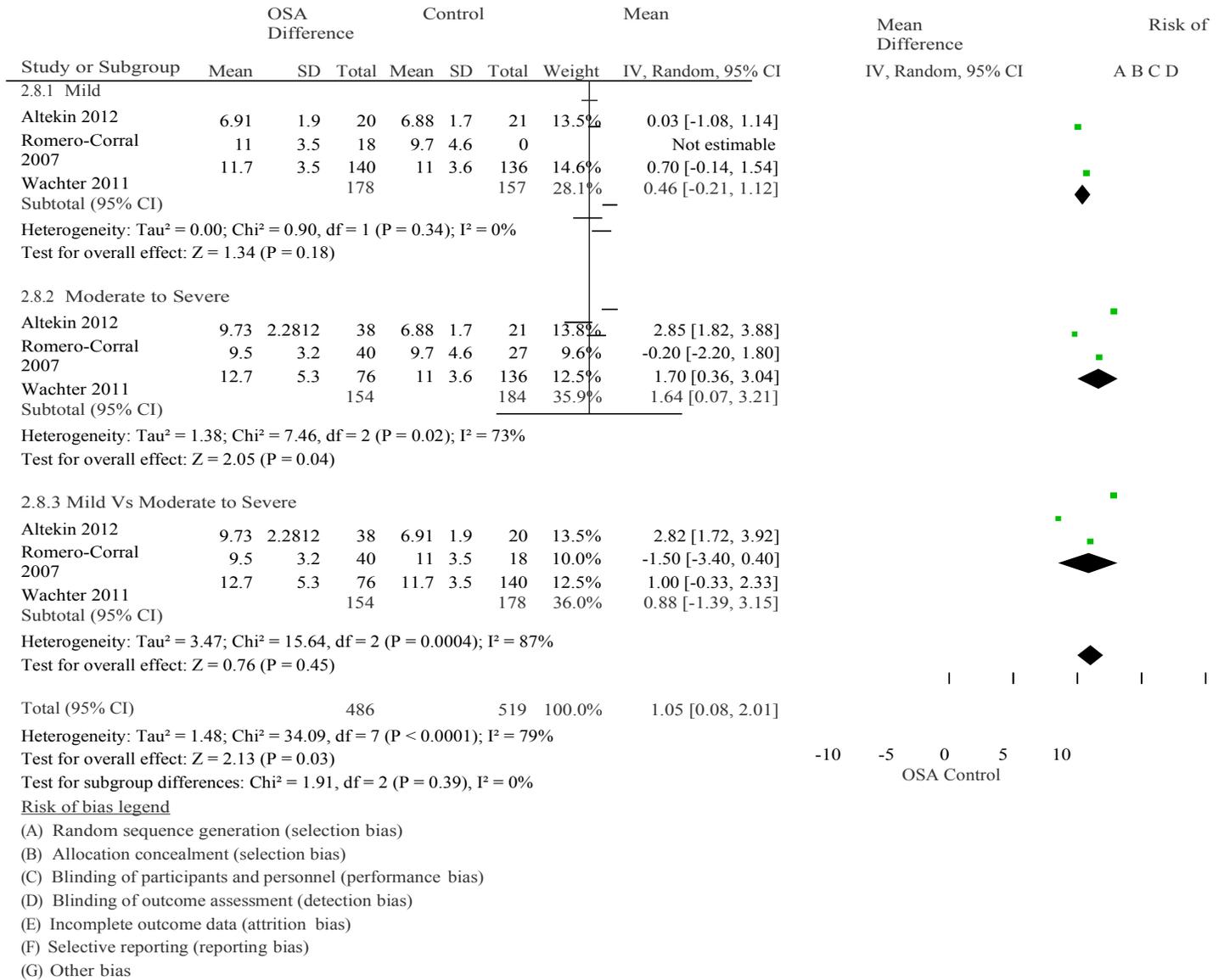


Figure 4: Relationship between OSA severity and Echocardiographic parameters.