
























## 2.1 LVED

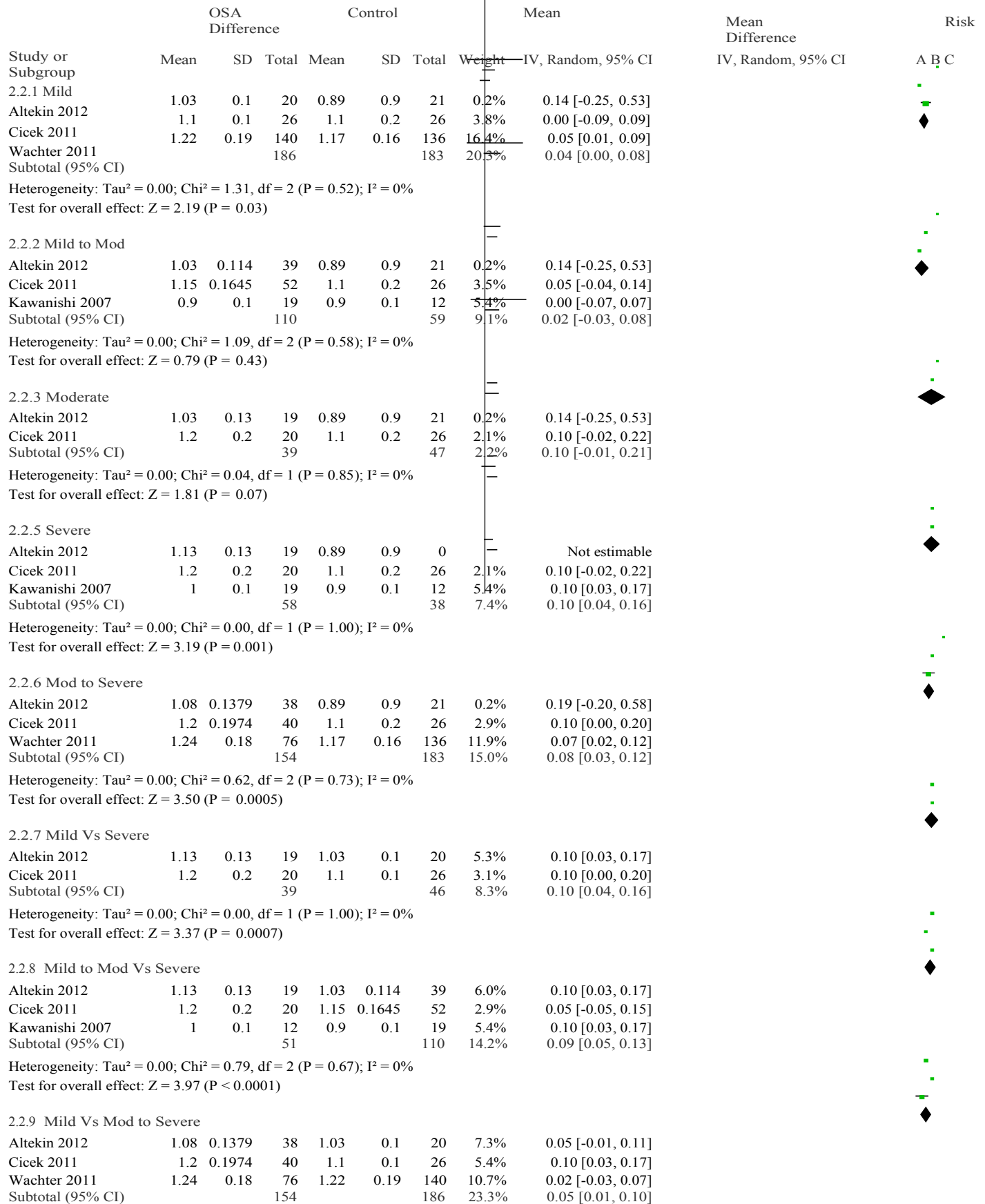
Study or Subgroup	Experimental			Control			Weight	Mean Difference	Mean Difference	A B
	Mean	SD	Total	Mean	SD	Total		IV, Random, 95% CI	IV, Random, 95% CI	
2.1.1 Mild										
Cicek 2011	41.9	3.9	26	43.5	4.4	26	2.7%	-1.60 [-3.86, 0.66]		
Wachter 2011	50	5	140	50	6	136	7.3%	0.00 [-1.30, 1.30]		
Subtotal (95% CI)			166			162	10.1%	-0.52 [-1.99, 0.95]		
Heterogeneity: Tau² = 0.39; Chi² = 1.44, df = 1 (P = 0.23); I² = 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: Tau² = 0.13; Chi² = 2.35, df = 2 (P = 0.31); I² = 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: Tau² = 4.60; Chi² = 4.88, df = 1 (P = 0.03); I² = 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: Tau² = 0.00; Chi² = 0.82, df = 2 (P = 0.66); I² = 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: Tau² = 0.00; Chi² = 0.93, df = 2 (P = 0.63); I² = 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: Tau² = 0.56; Chi² = 1.53, df = 1 (P = 0.22); I² = 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: Tau² = 0.08; Chi² = 16.80, df = 14 (P = 0.27); I² = 17%										
Test for overall effect: Z = 0.40 (P = 0.69)										
Test for subgroup differences: Chi² = 2.84, df = 5 (P = 0.72), I² = 0%										
OSA Control										

-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

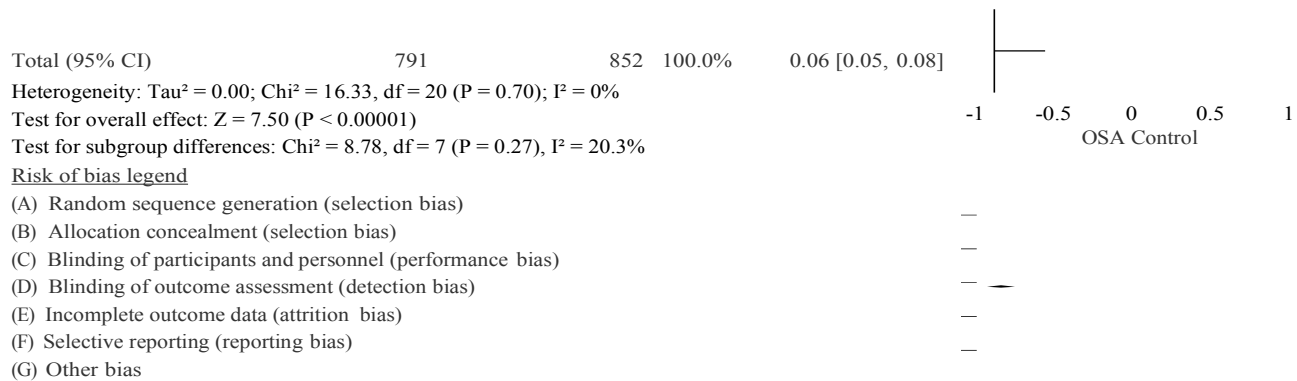
## 2.2 IVSD



Heterogeneity:  $\text{Tau}^2 = 0.00$ ;  $\text{Chi}^2 = 3.14$ ,  $\text{df} = 2$  ( $P = 0.21$ );  $I^2 = 36\%$

Test for overall effect:  $Z = 2.26$  ( $P = 0.02$ )

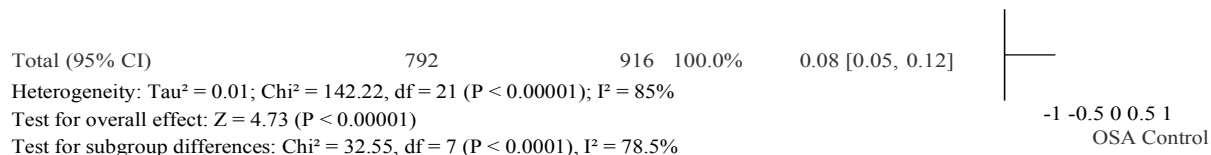
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2.3 PWD										Ris
Study or Subgroup	OSA			Control			Weight	Mean Difference IV, Random, 95% CI	Mean Difference IV, Random, 95% CI	A B C
	Mean	SD	Total	Mean	SD	Total				
2.3.1 Mild										
Altekin 2012	1.03	0.09	20	0.88	0.07	21	5.0%	0.15 [0.10, 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 <sup>2</sup> = 0.00; Chi <sup>2</sup> = 13.44, df = 2 (P = 0.001); I <sup>2</sup> = 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 <sup>2</sup> = 0.01; Chi <sup>2</sup> = 13.14, df = 2 (P = 0.001); I <sup>2</sup> = 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 <sup>2</sup> = 0.00; Chi <sup>2</sup> = 0.35, df = 1 (P = 0.55); I <sup>2</sup> = 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 <sup>2</sup> = 0.01; Chi <sup>2</sup> = 20.50, df = 2 (P < 0.0001); I <sup>2</sup> = 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 <sup>2</sup> = 0.00; Chi <sup>2</sup> = 7.26, df = 2 (P = 0.03); I <sup>2</sup> = 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 <sup>2</sup> = 0.00; Chi <sup>2</sup> = 2.94, df = 1 (P = 0.09); I <sup>2</sup> = 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 <sup>2</sup> = 0.00; Chi <sup>2</sup> = 7.71, df = 2 (P = 0.02); I <sup>2</sup> = 74%										
Test for overall effect: Z = 0.99 (P = 0.32)										
2.3.8 Mild Vs Mod to Severe										
Altekin 2012	1.0									

Study or Subgroup	OSA			Control			Weight	Mean Difference	Mean Difference	Ris
	Mean	SD	Total	Mean	SD	Total		IV, Random, 95% CI	IV, Random, 95% CI	A B C
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: Tau² = 0.00; Chi² = 13.44, df = 2 (P = 0.001); I² = 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: Tau² = 0.01; Chi² = 13.14, df = 2 (P = 0.001); I² = 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: Tau² = 0.00; Chi² = 0.35, df = 1 (P = 0.55); I² = 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: Tau² = 0.01; Chi² = 20.50, df = 2 (P < 0.0001); I² = 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: Tau² = 0.00; Chi² = 7.26, df = 2 (P = 0.03); I² = 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: Tau² = 0.00; Chi² = 2.94, df = 1 (P = 0.09); I² = 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: Tau² = 0.00; Chi² = 7.71, df = 2 (P = 0.02); I² = 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: Tau² = 0.00; Chi² = 1.62, df = 2 (P = 0.44); I² = 0%										
Test for overall effect: Z = 1.86 (P = 0.06)										



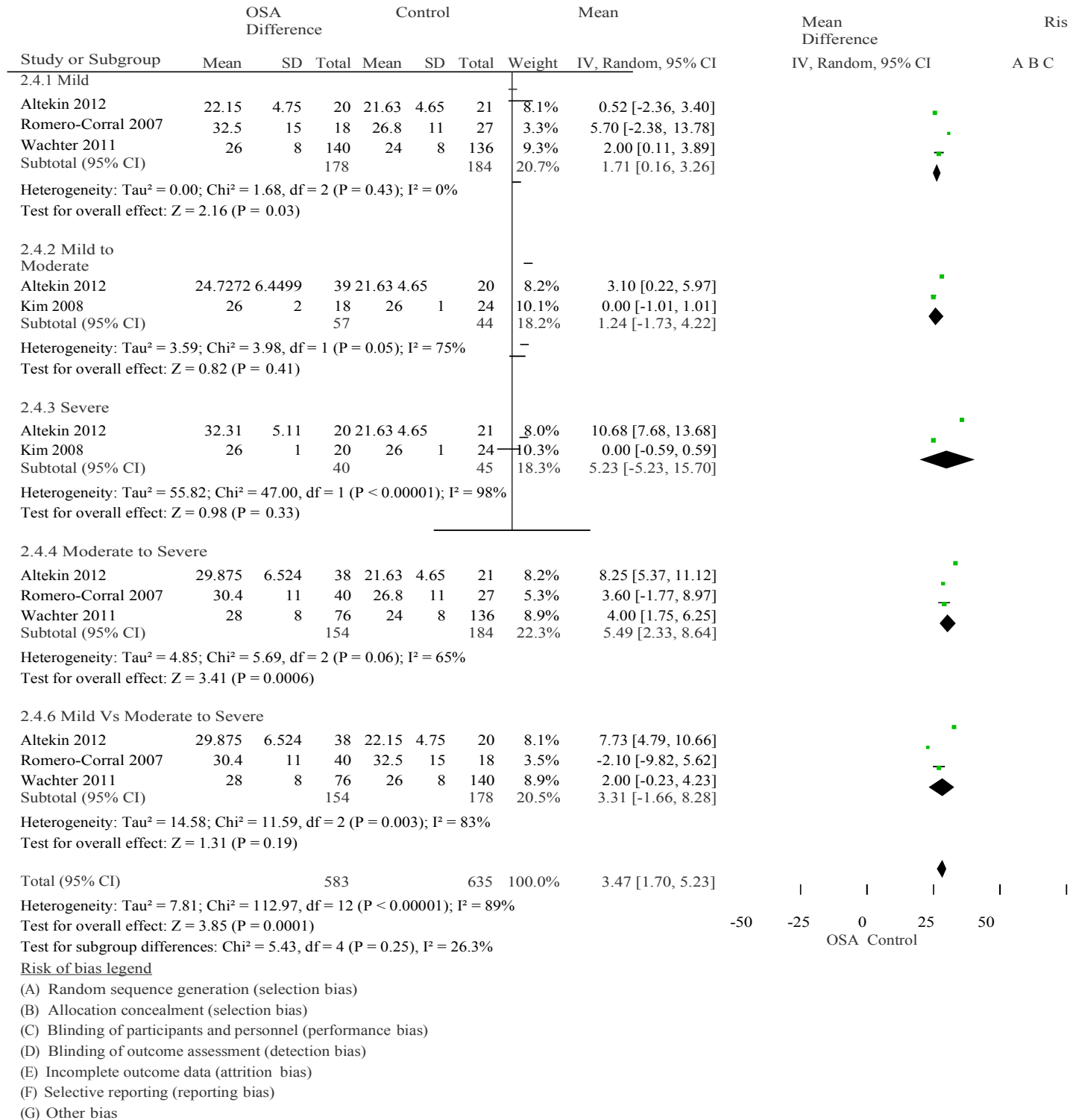


Risk of bias legend

- (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

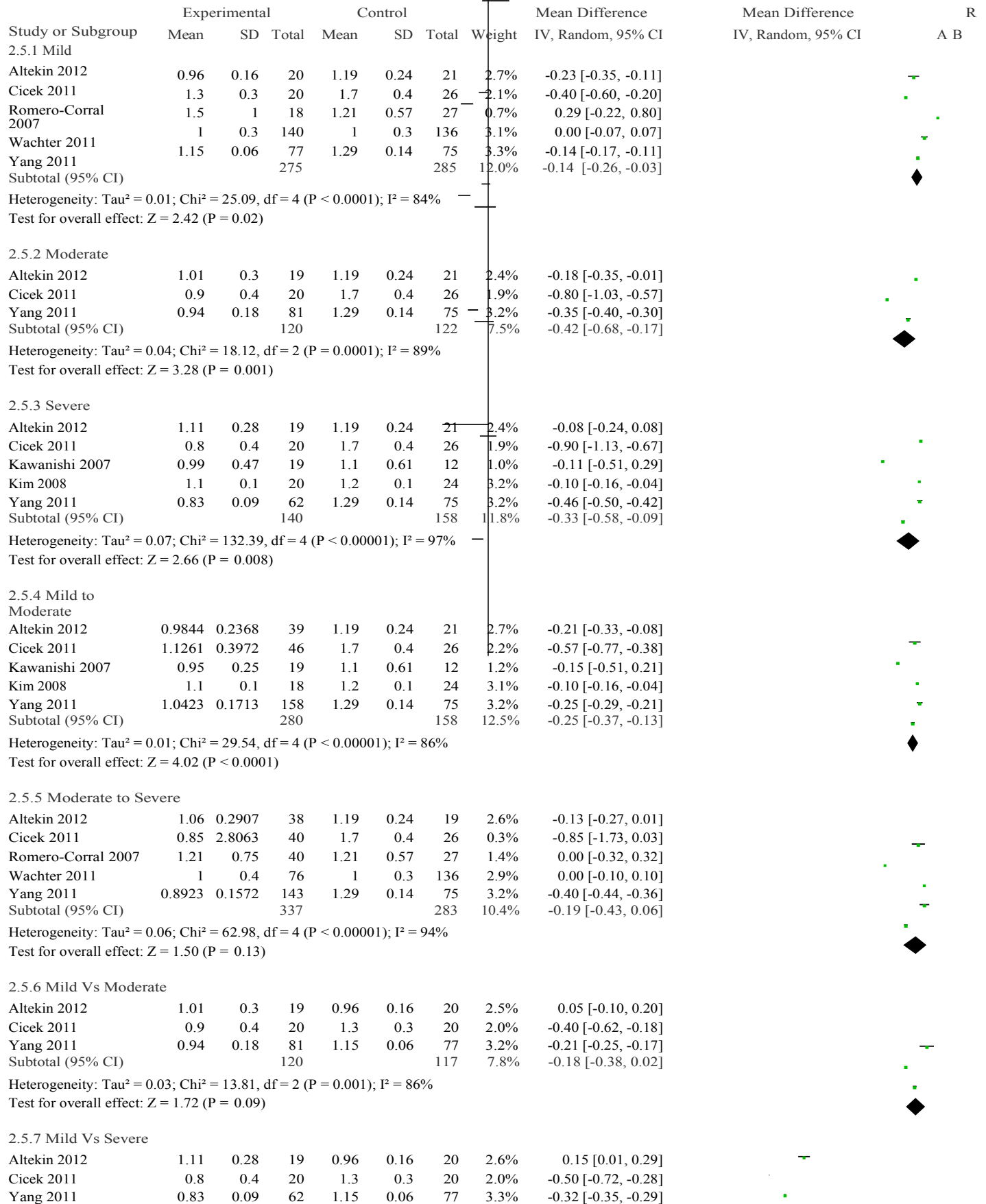


## 2.4 LAVI





## 2.5 E/A ratio



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]

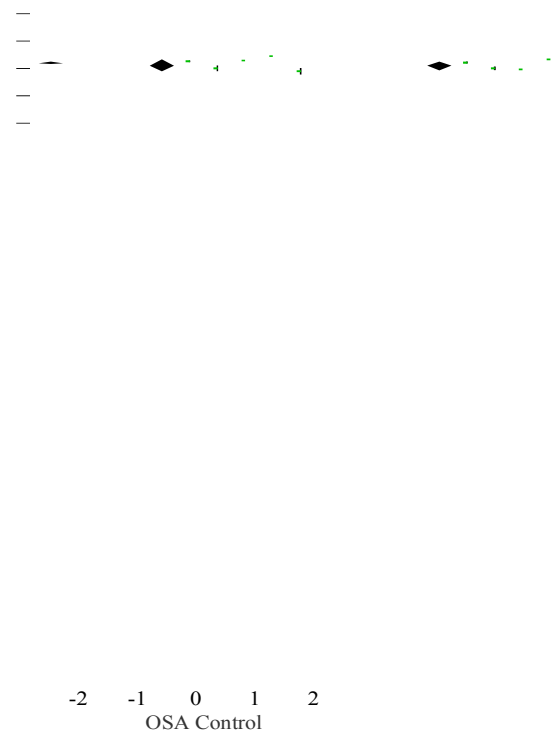
Heterogeneity:  $\text{Tau}^2 = 0.02$ ;  $\text{Chi}^2 = 695.79$ ,  $\text{df} = 41$  ( $P < 0.00001$ );  $I^2 = 94\%$

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

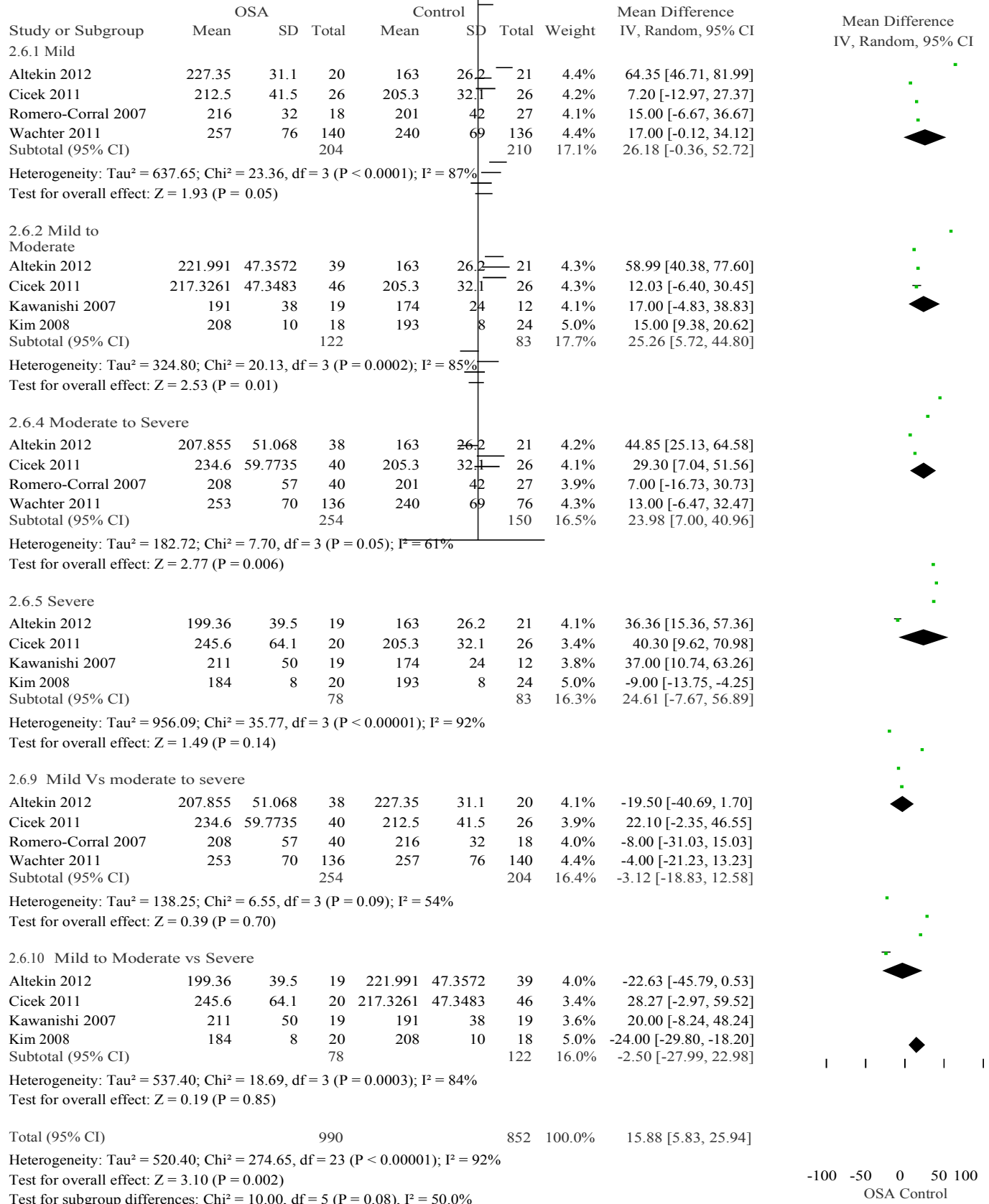
Test for subgroup differences:  $\text{Chi}^2 = 12.29$ ,  $\text{df} = 9$  ( $P = 0.20$ ),  $I^2 = 26.8\%$

#### 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



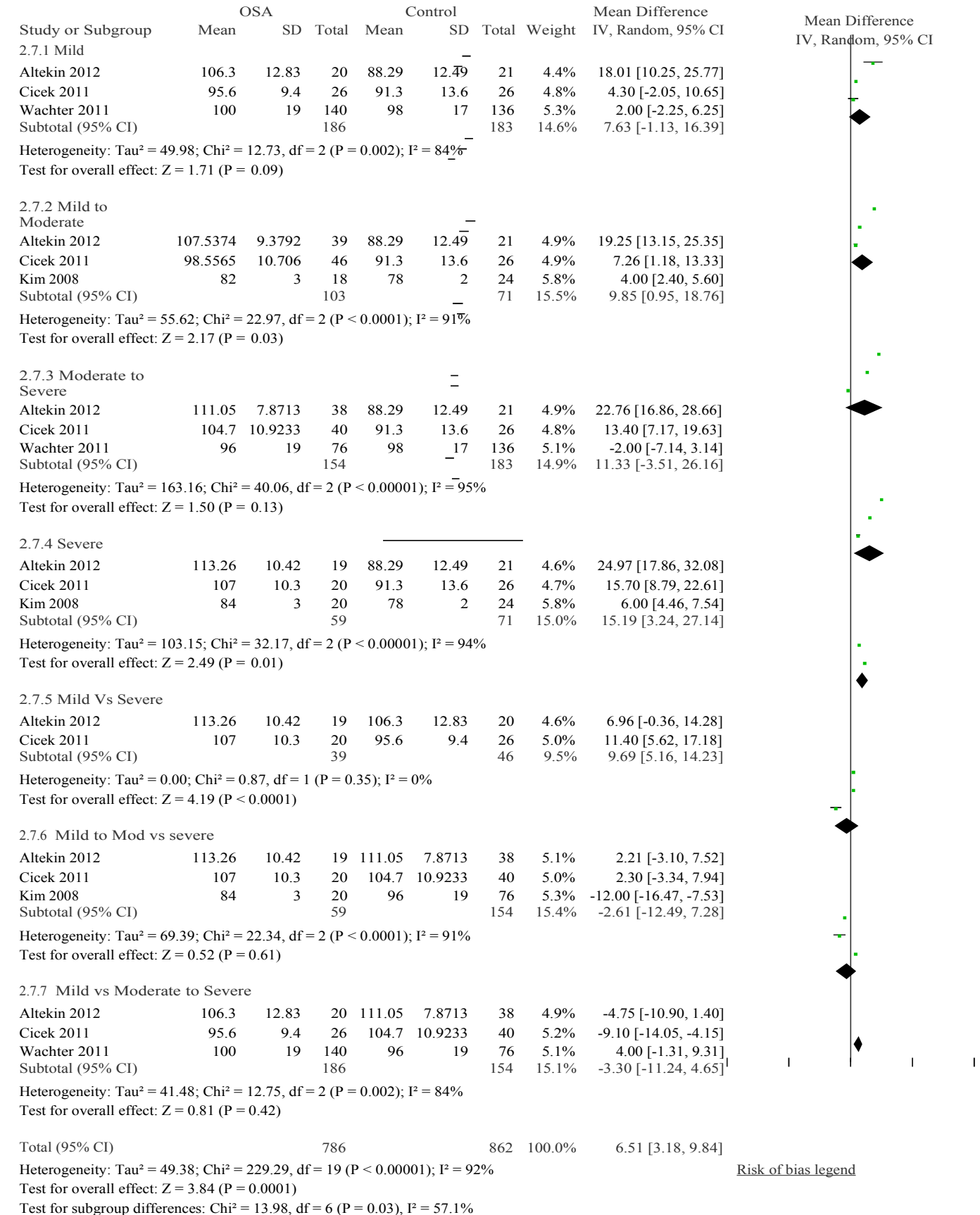
## 2.6 Dec Time



-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



-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)
  - (E) Incomplete outcome data (attrition bias)
  - (F) Selective reporting (reporting bias)
  - (G) Other bias



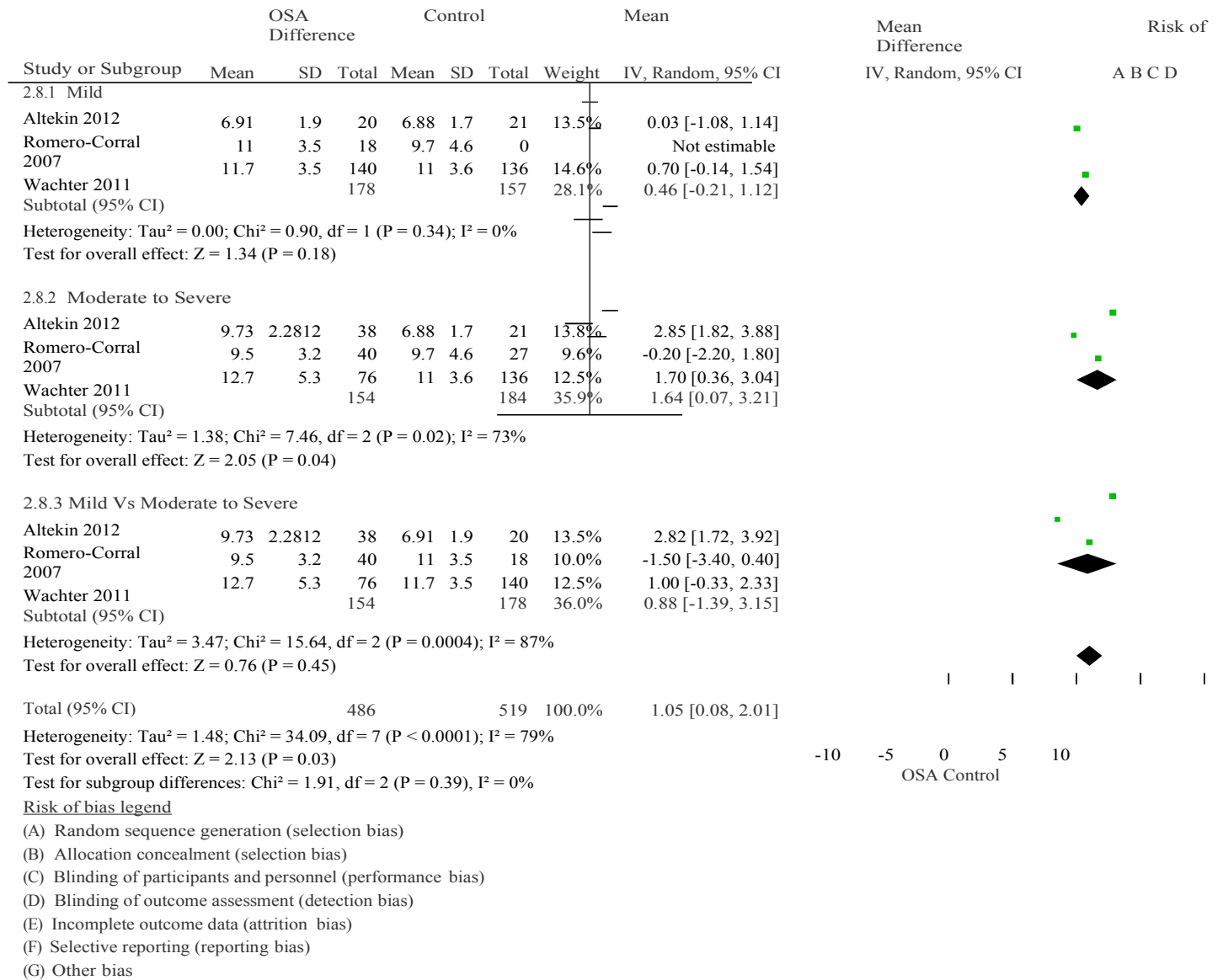


Figure 4: Relationship between OSA severity and Echocardiographic parameters.