## SUPPLEMENTAL DATA FILES

## **FIGURES**

**Figure S1.** Forest plot for subgroup analysis of  $VO_{2peak}$  (in mL·kg<sup>-1</sup>·min<sup>-1</sup>) based on AHI. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.

						OSA		Controls	
Author(s) and Year					N	Mean (SD)	Ν	Mean (SD)	Mean difference [95% CI]
Mean AHI lower than 30									
Vanuxem et al. , 1997	F				11	26.4 (1.2)	9	33.2 (1.4)	-6.80 [ -7.96, -5.64]
Kaleth et al. , 2007			⊢ <del>•</del> − •		23	21.9 (0.8)	9	21.9 (1.6)	0.00 [ -1.10, 1.10]
Hargens et al. , 2008				-	14	27.1 (4.5)	16	28 (5.8)	-0.90 [ -4.59, 2.79]
Rizzi et al., 2010		· · · · ·			27	28.4 (10)	27	28.6 (8.1)	-0.20 [ -5.05, 4.65]
Rizzi et al., 2013			•		53	26 (9.3)	62	28.1 (7.9)	-2.10 [ -5.28, 1.08]
Kline et al., 2013			⊢ =÷		43	21.6 (0.8)	9	22.1 (2.3)	-0.50 [ -2.02, 1.02]
Butner et al. , 2013		-	<u> </u>		27	26.6 (6.3)	43	29.4 (7.7)	-2.80 [ -6.11, 0.51]
Cavagnolli et al., 2014		H	-		10	39.7 (7.6)	10	39.3 (7)	0.40 [ -6.00, 6.80]
RE Model for Subgroup (I <sup>2</sup> = 84.6%)									-1.91 [-3.90, 0.09]
Mean AHI greater than 30									
Tryfon et al., 2004		H	-		17	24.6 (7.2)	10	23.1 (5.9)	1.50 [ -3.51, 6.51]
Ozturk et al., 2005		H			19	19.8 (3.1)	11	21.8 (5.9)	-2.00 [ -5.75, 1.75]
Alonso-Fernández et al. , 2006		H	-		31	25 (6.8)	15	25.3 (7.6)	-0.31 [ -4.84, 4.22]
Vanhecke et al., 2008		<b>—</b>	-		42	17.6 (4.2)	50	21.1 (3.8)	-3.50 [ -5.15, -1.85]
Nanas et al., 2010	H	-	-		21	28.7 (4)	10	34.7 (6.2)	-6.00 [-10.21, -1.79]
Innocenti et al. , 2012	H				8	17.7 (7.3)	7	19.5 (5.1)	-1.80 [ -8.11, 4.51]
Chien et al. , 2012		<b>⊢</b>	•		30	25 (4)	30	27.7 (2.8)	-2.70 [ -4.44, -0.96]
Chien et al., 2013		<b>⊢</b>			11	24.5 (3.4)	11	28.1 (2.9)	-3.60 [ -6.24, -0.96]
Beitler et al. , 2014	<b></b>				15	19.1 (6.4)	19	25.2 (9.5)	-6.10 [-11.46, -0.74]
Cepeda et al. , 2015			+=-1		30	22.6 (1)	30	23.6 (1.3)	-1.00 [ -1.59, -0.41]
RE Model for Subgroup (I <sup>2</sup> = 50.4%)		-	•						-2.45 [-3.61, -1.30]
RE Model for All Studies		-	•						-2.28 [ -3.43, -1.13]
	Ť	Ū.	i	Ū.	1				
-15	-10	-5	0	5	10				

**Figure S2.** Forest plot for subgroup analysis of  $VO_{2peak}$  (in mL·kg<sup>-1</sup>·min<sup>-1</sup>) based on age. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.

						OSA		Controls	
Author(s) and Year					Ν	Mean (SD)	Ν	Mean (SD)	Mean difference [95% CI]
Mean Age lower than 50									
Vanuxem et al. , 1997	ь	•			11	26.4 (1.2)	9	33.2 (1.4)	-6.80 [ -7.96, -5.64]
Tryfon et al., 2004					17	24.6 (7.2)	10	23.1 (5.9)	1.50 [ -3.51, 6.51]
Ozturk et al., 2005		-			19	19.8 (3.1)	11	21.8 (5.9)	-2.00 [ -5.75, 1.75]
Lin et al. , 2006	<b> </b>	-			20	21.6 (3.3)	20	30.1 (3.4)	-8.50 [-10.58, -6.42]
Kaleth et al. , 2007			_ <b>⊢</b> ∔		23	21.9 (0.8)	9	21.9 (1.6)	0.00 [ -1.10, 1.10]
Vanhecke et al., 2008			-		42	17.6 (4.2)	50	21.1 (3.8)	-3.50 [ -5.15, -1.85]
Hargens et al. , 2008					14	27.1 (4.5)	16	28 (5.8)	-0.90 [ -4.59, 2.79]
Nanas et al., 2010	H		-		21	28.7 (4)	10	34.7 (6.2)	-6.00 [-10.21, -1.79]
Innocenti et al. , 2012					8	17.7 (7.3)	7	19.5 (5.1)	-1.80 [ -8.11, 4.51]
Kline et al., 2013			⊢ =÷		43	21.6 (0.8)	9	22.1 (2.3)	-0.50 [ -2.02, 1.02]
Butner et al. , 2013		-	<u> </u>		27	26.6 (6.3)	43	29.4 (7.7)	-2.80 [ -6.11, 0.51]
Cavagnolli et al., 2014		1			10	39.7 (7.6)	10	39.3 (7)	0.40 [ -6.00, 6.80]
Beitler et al. , 2014	J				15	19.1 (6.4)	19	25.2 (9.5)	-6.10 [-11.46, -0.74]
Cepeda et al. , 2015			┝┻┥		30	22.6 (1)	30	23.6 (1.3)	-1.00 [ -1.59, -0.41]
RE Model for Subgroup (I <sup>2</sup> = 90.3%	)								-2.86 [-4.54, -1.18]
Mean AHI greater than 50									
Alonso-Fernández et al. , 2006		F			31	25 (6.8)	15	25.3 (7.6)	-0.31 [ -4.84, 4.22]
Rizzi et al., 2010					27	28.4 (10)	27	28.6 (8.1)	-0.20 [ -5.05, 4.65]
Chien et al. , 2012					30	25 (4)	30	27.7 (2.8)	-2.70 [ -4.44, -0.96]
Rizzi et al., 2013			• <u> </u>		53	26 (9.3)	62	28.1 (7.9)	-2.10 [ -5.28, 1.08]
Chien et al., 2013					11	24.5 (3.4)	11	28.1 (2.9)	-3.60 [ -6.24, -0.96]
RE Model for Subgroup (I <sup>2</sup> = 0.0%)									-2.47 [-3.70, -1.24
RE Model for All Studies			-						-2.66 [ -3.96, -1.37]
· · · · ·	1	i i		1	-				
45	10	-	0	-	10				
-15	-10	-5	0	5	10				

## **Figure S3.** Forest plot for subgroup analysis of $VO_{2peak}$ (in mL·kg<sup>-1</sup>·min<sup>-1</sup>) based on BMI.

The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.

					OSA		Controls		
Author(s) and Year				N	Mean (SD)	Ν	Mean (SD)	Mean difference [95% CI]	
BMI lower than 30									
Vanuxem et al. , 1997	<b>⊢</b> ■]			11	26.4 (1.2)	9	33.2 (1.4)	-6.80 [ -7.96, -5.64]	
Lin et al. , 2006	<b>⊢</b> −−−			20	21.6 (3.3)	20	30.1 (3.4)	-8.50 [-10.58, -6.42]	
Rizzi et al., 2010	H		<u> </u>	27	28.4 (10)	27	28.6 (8.1)	-0.20 [ -5.05, 4.65]	
Nanas et al., 2010				21	28.7 (4)	10	34.7 (6.2)	-6.00 [-10.21, -1.79]	
Chien et al. , 2012		<b>⊢</b> ∎] ;		30	25 (4)	30	27.7 (2.8)	-2.70 [ -4.44, -0.96]	
Rizzi et al., 2013	F			53	26 (9.3)	62	28.1 (7.9)	-2.10 [ -5.28, 1.08]	
Chien et al., 2013				11	24.5 (3.4)	11	28.1 (2.9)	-3.60 [ -6.24, -0.96]	
Butner et al. , 2013				27	26.6 (6.3)	43	29.4 (7.7)	-2.80 [ -6.11, 0.51]	
Cavagnolli et al., 2014	H			10	39.7 (7.6)	10	39.3 (7)	0.40 [ -6.00, 6.80]	
RE Model for Subgroup (I <sup>2</sup> = 78.8%)	-							-4.09 [-5.99, -2.19]	
BMI greater than 30									
Tryfon et al., 2004				17	24.6 (7.2)	10	23.1 (5.9)	1.50 [ -3.51, 6.51]	
Ozturk et al., 2005				19	19.8 (3.1)	11	21.8 (5.9)	-2.00 [ -5.75, 1.75]	
Alonso-Fernández et al. , 2006	H		H	31	25 (6.8)	15	25.3 (7.6)	-0.31 [ -4.84, 4.22]	
Kaleth et al. , 2007		⊢∔⊸		23	21.9 (0.8)	9	21.9 (1.6)	0.00 [ -1.10, 1.10]	
Vanhecke et al., 2008	⊢			42	17.6 (4.2)	50	21.1 (3.8)	-3.50 [ -5.15, -1.85]	
Hargens et al. , 2008	H			14	27.1 (4.5)	16	28 (5.8)	-0.90 [ -4.59, 2.79]	
Innocenti et al. , 2012	L			8	17.7 (7.3)	7	19.5 (5.1)	-1.80 [ -8.11, 4.51]	
Kline et al., 2013		⊢ ∎÷ i		43	21.6 (0.8)	9	22.1 (2.3)	-0.50 [ -2.02, 1.02]	
Beitler et al. , 2014	· · · · ·			15	19.1 (6.4)	19	25.2 (9.5)	-6.10 [-11.46, -0.74]	
Cepeda et al. , 2015		H=1		30	22.6 (1)	30	23.6 (1.3)	-1.00 [ -1.59, -0.41]	
RE Model for Subgroup (I <sup>2</sup> = 57.5%)		-						-1.22 [-2.26, -0.19]	
RE Model for All Studies		-						-2.66 [ -3.96, -1.37]	
	1 1		1						
	10 5	1		40					
-15	-10 -5	0	5	10					

**Figure S4.** Forest plot for mean difference in peak heart rate (beat·min<sup>-1</sup>) between OSA patients and controls. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.



**Figure S5.** Forest plot for mean difference in peak diastolic blood pressure (mmHg) between OSA patients and controls. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.



**Figure S6.** Forest plot for mean difference in peak ventilation  $(L \cdot min^{-1})$  between OSA patients and controls. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.



**Figure S7.** Forest plot for mean difference in peak oxygen pulse (beat  $O_2 \cdot min^{-1}$ ) between OSA patients and controls. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.

			Cases		Controls	Mean difference
Author(s) and Year		N	Mean (SD)	Ν	Mean (SD)	[95% CI]
Tryfon et al., 2004	<b>⊢</b>	17	17.8 (4.8)	10	11.7 (3.1)	6.10 [ 3.12, 9.08]
Ozturk et al., 2005	<b>⊢</b>	19	11.3 (2.5)	11	11.2 (2.8)	0.10 [-1.90, 2.10]
Alonso-Fernández et al., 2006	<b>⊢</b>	31	16.8 (3.6)	15	15.5 (4.5)	1.30 [-1.31, 3.91]
Lin et al. , 2006	⊢∎⊣	20	9.4 (1.8)	20	12.6 (1.4)	-3.20 [-4.20, -2.20]
Nanas et al., 2010	<b>⊢∔∎</b> 1	21	17.3 (3.1)	10	16.5 (2)	0.80 [-1.02, 2.62]
Rizzi et al., 2010	<b>⊢</b>	27	11.2 (3.9)	27	11 (3.8)	0.20 [-1.85, 2.25]
Innocenti et al. , 2012	<b>⊢</b>	8	16.8 (4.7)	7	14.6 (4.5)	2.20 [-2.46, 6.86]
Rizzi et al. (1), 2013	┝─■─┤	53	11.6 (3.2)	62	13.3 (4.7)	-1.70 [-3.15, -0.25]
Rizzi et al. (2), 2013	<b>├───</b> ─	53	12.3 (3.9)	62	10.8 (2.9)	1.50 [ 0.23, 2.77]
Beitler et al. , 2014	<b>⊢</b>	15	12.5 (3.2)	19	12.2 (4.2)	0.30 [-2.19, 2.79]
Cepeda et al. , 2015	H <b>₩</b> -1	30	14.4 (1)	30	14.3 (1)	0.10 [-0.41, 0.61]
RE Model for All Studies (I <sup>2</sup> = 87.9%)	•					0.43 [-0.89, 1.75]
	-5 0 5 10					

**Figure S8.** Forest plot for mean difference in peak systolic blood pressure (mmHg) between OSA patients and controls. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.



## **Figure S9.** Quality assessment analysis for $VO_{2peak}$ in mL·kg<sup>-1</sup>·min<sup>-1</sup>

							OSA		Controls	
Author(s) and Year						N	Mean (SD)	N	Mean (SD)	Mean difference [95% C
Quality: 4 and 5*										
Vanuxem et al. , 1997		F				11	26.4 (1.2)	9	33.2 (1.4)	-6.80 [ -7.96, -5.64
Tryfon et al., 2004			-			17	24.6 (7.2)	10	23.1 (5.9)	1.50 [ -3.51, 6.51
Ozturk et al., 2005			1	•		19	19.8 (3.1)	11	21.8 (5.9)	-2.00 [ -5.75, 1.75
Alonso-Fernández et a	al. , 2006					31	25 (6.8)	15	25.3 (7.6)	-0.31 [ -4.84, 4.22
Kaleth et al., 2007				_ <b>⊢</b> ∔(		23	21.9 (0.8)	9	21.9 (1.6)	0.00 [ -1.10, 1.10
Vanhecke et al., 2008			<b>⊢</b>	-		42	17.6 (4.2)	50	21.1 (3.8)	-3.50 [ -5.151.85
Rizzi et al., 2010						27	28.4 (10)	27	28.6 (8.1)	-0.20 [ -5.05, 4.65
Kline et al., 2013				⊢ ∎∔ I		43	21.6 (0.8)	9	22.1 (2.3)	-0.50 [ -2.02, 1.02
Butner et al., 2013						27	26.6 (6.3)	43	29.4 (7.7)	-2.80 [ -6.11, 0.51
Beitler et al., 2014		H		i		15	19.1 (6.4)	19	25.2 (9.5)	-6.10 [-11.46, -0.74
Cepeda et al. , 2015				⊢∎⊣		30	22.6 (1)	30	23.6 (1.3)	-1.00 [ -1.59, -0.41
RE Model for Subgroup	(l² = 88.29	6)	-	-						-2.08 [-3.68, -0.48
Quality 6 and 7*										
Lin et al. , 2006		<b>⊢</b> −■−				20	21.6 (3.3)	20	30.1 (3.4)	-8.50 [-10.58, -6.42
Hargens et al. , 2008					-	14	27.1 (4.5)	16	28 (5.8)	-0.90 [ -4.59, 2.79
Nanas et al., 2010		H				21	28.7 (4)	10	34.7 (6.2)	-6.00 [-10.21, -1.79
Innocenti et al. , 2012		F		-		8	17.7 (7.3)	7	19.5 (5.1)	-1.80 [ -8.11, 4.51
Chien et al., 2012				<u>—</u>		30	25 (4)	30	27.7 (2.8)	-2.70 [ -4.44, -0.96
Rizzi et al., 2013			H	<b>-</b>		53	26 (9.3)	62	28.1 (7.9)	-2.10 [ -5.28, 1.08
Chien et al., 2013						11	24.5 (3.4)	11	28.1 (2.9)	-3.60 [ -6.24, -0.96
Cavagnolli et al., 2014			+		——————————————————————————————————————	10	39.7 (7.6)	10	39.3 (7)	0.40 [ -6.00, 6.80
RE Model for Subgroup	(l² = 71.59	6)		-						-3.58 [-5.68, -1.47
RE Model for All Studie	s		-	•						-2.66 [ -3.96, -1.3]
	-	1	- E	<del>i</del>	- E					
	_15	-10	-5	0	5	10				





Figure S11. Forest plot for mean difference in BMI  $(kg/m_2)$  between OSA patients and controls. The diamond reflects the 95% confidence interval of the pooled estimate of mean difference.

					C	ases		Controls	
Author(s) and Year				N	1 1	Mean (SD)	N	Mean (SD)	Mean difference [95% CI
Vanuxem et al. , 1997		н <b>і</b> н.		11		26.6 (1)	9	26.4 (1.2)	0.20 [-0.78, 1.18]
Tryfon et al., 2004		H	·	17	7 3	4.7 (7.6)	10	32.5 (4.3)	2.20 [-2.29, 6.69]
Ozturk et al., 2005				19	3 3	0.7 (4.6)	11	28.9 (3)	1.80 [-0.92, 4.52]
Alonso-Fernández et al., 2006		<u> </u>		31	1	30.4 (4)	15	28.7 (4.7)	1.70 [-1.06, 4.46]
Lin et al. , 2006		<b></b>	-	20	) 2	8.3 (2.6)	20	27.6 (2.7)	0.70 [-0.94, 2.34]
Kaleth et al., 2007		H	-	⊣ 23	3 3	3.1 (5.5)	9	29.5 (5.5)	3.60 [-0.64, 7.84]
Hargens et al. , 2008		H	-	14	1	32 (3.7)	16	31.4 (3.7)	0.60 [-2.05, 3.25]
Vanhecke et al., 2008		<u> </u>		42	2 5	0.5 (9.4)	50	47.2 (9.1)	3.30 [-0.50, 7.10]
Nanas et al., 2010		j	-	21	1 2	9.3 (2.2)	10	28.1 (1.4)	1.20 [-0.08, 2.48]
Rizzi et al., 2010		1 <b>1</b>		27	2	3.1 (1.6)	27	22.7 (1.7)	0.40 [-0.48, 1.28]
Chien et al., 2012				30	) 2	6.5 (2.4)	30	25.9 (2.6)	0.60 [-0.67, 1.87]
Innocenti et al. , 2012	ļ			8	4	4.9 (7.5)	7	44 (9.6)	0.90 [-7.91, 9.71]
Butner et al. , 2013			· · · · ·	27	7	30 (7)	43	28 (6)	2.00 [-1.19, 5.19]
Chien et al., 2013			-	11	1 2	6.6 (3.6)	11	26.4 (3.5)	0.20 [-2.77, 3.17]
Kline et al., 2013		н	■→	43	3 3	4.8 (0.9)	9	32.5 (1.2)	2.30 [ 1.47, 3.13]
Rizzi et al., 2013		·		53	3 2	8.8 (6.2)	62	27.2 (5.7)	1.60 [-0.59, 3.79]
Beitler et al., 2014				- 15	5 3	2.2 (7.8)	19	28.8 (6.5)	3.40 [-1.51, 8.31]
Cavagnolli et al., 2014		<u> </u>		10	) 2	7.5 (1.9)	10	26 (3.4)	1.50 [-0.91, 3.91]
Cepeda et al. , 2015				30	)	32 (1)	30	32 (1)	0.00 [-0.51, 0.51]
RE Model		•							1.02 [ 0.49, 1.54]
	3	i	1						
-10	-5	0	5	10					