

SUPPLEMENTARY MATERIAL

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Studies without control group

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Table S1A. Meta-regression with subgroup analysis										
	FEV ₁ (L)					FVC (L)				
	Studies	Participants	Effect estimate	I ²	p	Studies	Participants	Effect estimate	I ²	p
Male	10	1396	-0.28 (-0.41, -0.16)	89%	<0.001	10	1416	-0.36 (-0.59, -0.14)	95%	0.001
Female	7	1376	-0.29 (-0.43, -0.15)	88%	<0.001	7	1376	-0.42 (-0.69, -0.15)	96%	0.003
Nonsmokers	19	1490	-0.39 (-0.52, -0.27)	92%	<0.001	20	1614	-0.45 (-0.58, -0.32)	84%	<0.001
Continent										
Africa	2	275	-0.71 (-1.66, 0.24)	99%	0.14	2	275	-0.68 (-1.53, 0.16)	97%	0.11
America	8	17,639	-0.30 (-0.41, -0.19)	95%	<0.001	8	17,639	-0.25 (-0.33, -0.17)	85%	<0.001
Asia	15	2018	-0.35 (-0.42, -0.28)	78%	<0.001	15	2018	-0.37 (-0.48, -0.27)	80%	<0.001
Europe	8	1110	-0.28 (-0.40, -0.15)	51%	<0.001	6	950	-0.39 (-0.57, -0.22)	47%	<0.011
Oceania	1	15	NA	NA	NA	1	15	NA	NA	NA
BMI (kg/m ²)										
<25	4	285	-0.27 (-0.51, -0.02)	72%	0.03	4	285	-0.31 (-0.62, -0.00)	77%	0.05
25-29.9	11	3444	-0.39 (-0.51, -0.27)	95%	<0.001	11	3444	-0.32 (-0.43, -0.20)	84%	<0.001
30-39.9	7	15,832	-0.27 (-0.37, -0.17)	80%	<0.001	7	15,832	-0.37 (-0.45, -0.30)	55%	<0.001
≥ 40	1	130	NA	NA	NA	0	0	NA	NA	NA

Table S1B. Meta-regression with subgroup analysis															
	FEF ₂₅₋₇₅ (L)					PEF (L/s)					DL _{CO}				
	Studies	Participants	Effect estimate	I ²	p	Studies	Participants	Effect estimate	I ²	p	Studies	Participants	Effect estimate	I ²	p
Male	1	72	NA	NA	NA	4	312	-1.31 (-1.98, -0.64)	95%	<0.001	1	19	NA	NA	NA
Female	0	NA	NA	NA	NA	3	169	-1.09 (-1.47, -0.71)	69%	<0.001	0	NA	NA	NA	NA
Nonsmokers	10	623	-0.52 (-0.81, -0.24)	86%	<0.001	14	1148	-1.14 (-1.55, -0.73)	94%	<0.001	6	400	-4.52 (-6.98, -2.06)	88%	<0.001
Continent															
Africa	1	70	NA	NA	NA	2	275	-1.69 (-3.58, 0.20)	97%	0.08	1	70	NA	NA	NA
America	1	34	NA	NA	NA	1	283	NA	NA	NA	3	4789	-1.74 (-2.95, -0.54)	74%	0.005
Asia	7	529	-0.38 (-0.52, -0.24)	27%	<0.001	11	969	-0.99 (-1.39, -0.60)	92%	<0.001	3	205	-3.62 (-4.86, -2.39)	0%	<0.001
Europe	3	192	-0.32 (-0.67, 0.03)	45%	0.07	5	351	-1.11 (-1.93, -0.29)	81%	0.008	3	225	-3.80 (-5.35, -2.24)	0%	<0.001
Oceania	0	NA	NA	NA	NA	0	NA	NA	NA	NA	0	NA	NA	NA	NA
BMI (kg/m ²)															
<25	2	125	-0.30 (-0.63, -0.03)	0%	0.08	4	285	-1.19 (-1.91, -0.48)	71%	0.01	1	45	NA	NA	NA
25-29.9	2	95	-0.55 (-0.93, -0.17)	0%	0.005	7	845	-1.06 (-1.74, -0.38)	98%	0.002	2	208	-4.25 (-5.72, -2.77)	0%	<0.001
30-39.9	1	110	NA	NA	NA	2	134	-0.90 (-2.12, 0.32)	92%	0.15	3	4789	-1.74 (-2.95, -0.54)	74%	0.005
≥ 40	0	NA	NA	NA	NA	0	NA	NA	NA	NA	0	NA	NA	NA	NA

Abbreviations: BMI, body mass index; DL_{CO}, diffusion capacity of the lung for carbon monoxide; FEF_{25-75%}, forced expiratory flow between 25% and 75% of total lung capacity; FEV₁, forced expiratory volume in one second; FVC, forced vital capacity; NA, not applicable; PEF, peak expiratory flow.

	FEV ₁ (L)				FVC (L)			
	Studies	Participants	Effect estimate	I ²	Studies	Participants	Effect estimate	I ²
Statistical analysis method								
Random effect	34	21,057	-0.34 (-0.42, -0.27)	94%	32	20,987	-0.36 (-0.43, -0.29)	87%
Fixed effect			-0.33 (-0.34, -0.32)				-0.32 (-0.34, -0.31)	
Publication year								
Before 2000	1	1239	NA	NA	1	1239	NA	NA
2000-2009	14	12,637	-0.28 (-0.36, -0.21)	84%	13	12,607	-0.35 (-0.44, -0.26)	84%
2010-2019	19	7181	-0.34 (-0.46, -0.23)	94%	18	7051	-0.39 (-0.50, -0.28)	90%
Type-2 diabetes group size								
<50 patients	18	940	-0.40 (-0.53, -0.27)	91%	17	910	-0.47 (-0.63, -0.30)	81%
≥50 patients	16	20,117	-0.29 (-0.36, -0.2)	92%	15	19,987	-0.29 (-0.34, -0.23)	82%
Study quality								
Only good quality studies	27	19,574	-0.35 (-0.45, -0.25)	94%	26	19,544	-0.38 (-0.47, -0.29)	100%
Including predatory journals and grey literature	54	23,495	-1.18 (1.38, -0.98)	96%	52	23,335	-1.03 (-1.21, -0.85)	95%
Excluding the greatest weight study	33	20,774	-0.34 (-0.43, -0.26)	94%	31	16,733	-0.36 (-0.43, -0.29)	88%

	FEF ₂₅₋₇₅ (L)				PEF (L/s)				DL _{CO}			
	Studies	Participants	Effect estimate	I ²	Studies	Participants	Effect estimate	I ²	Studies	Participants	Effect estimate	I ²
Statistical analysis method												
Random effect	12	825	-0.48 (-0.71, -0.24)	84%	19	1878	-1.07 (-1.73, -0.71)	97%	10	5289	-3.42 (-5.14, -1.70)	93%
Fixed effect			-0.47 (-0.54, -0.39)				-0.60 (-0.64, -0.56)				-3.17 (-3.55, -2.80)	
Publication year												
Before 2000	0	NA	NA	NA	0	NA	NA	NA	1	100	NA	NA
2000-2009	5	288	-0.35 (-0.53, -0.17)	21%	6	551	-0.83 (-1.33, -0.32)	94%	3	225	-3.80 (-5.35, -2.24)	0%
2010-2019	7	537	-0.54 (-0.92, -0.16)	88%	13	1327	-1.18 (-1.67, -0.69)	94%	6	4964	-3.16 (-5.56, -0.77)	96%
Type-2 diabetes group size												
<50 patients	9	535	-0.57 (-0.85, -0.29)	86%	13	835	-1.24 (-1.60, -0.89)	88%	6	271	-3.58 (-6.59, -0.58)	91%
≥50 patients	3	290	-0.15 (-0.37, 0.07)	8%	6	1043	-0.62 (-0.90, -0.34)	79%	4	5018	-2.64 (-3.67, -1.61)	68%
Study quality												
Only good quality studies	12	825	-0.48 (-0.71, -0.24)	84%	16	1435	-1.09 (-1.51, -0.68)	92%	9	5189	-3.37 (-5.23, -1.50)	94%
Including predatory journals and grey literature	24	2027	-1.08 (-1.41, -0.74)	92%	35	3790	-1.06 (-1.31, -0.82)	92%	10	5289	-0.76 (-1.07, -0.45)	89%
Excluding the greatest weight study	11	753	-0.49 (-0.79, -0.20)	84%	18	1595	-1.12 (-1.47, -0.76)	93%	9	1125	-3.48 (-5.76, -1.20)	93%

Abbreviations: DL_{CO}, diffusion capacity of the lung for carbon monoxide; FEF_{25-75%}, forced expiratory flow between 25% and 75% of total lung capacity; FEV₁, forced expiratory volume in one second; FVC, forced vital capacity; NA, not applicable; PEF, peak expiratory flow.

Figure S1. Forest plot of forced expiratory volume in one second (L)

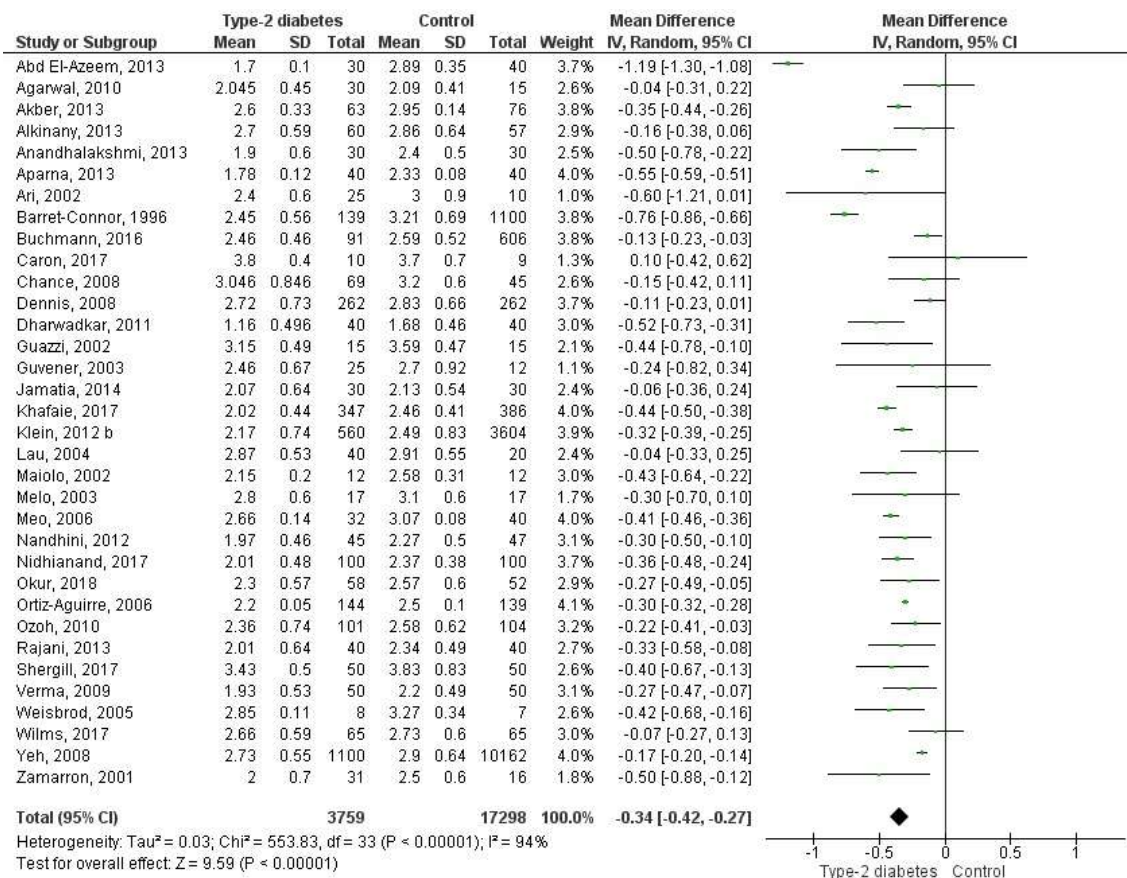


Figure S2. Forest plot of forced vital capacity (L)

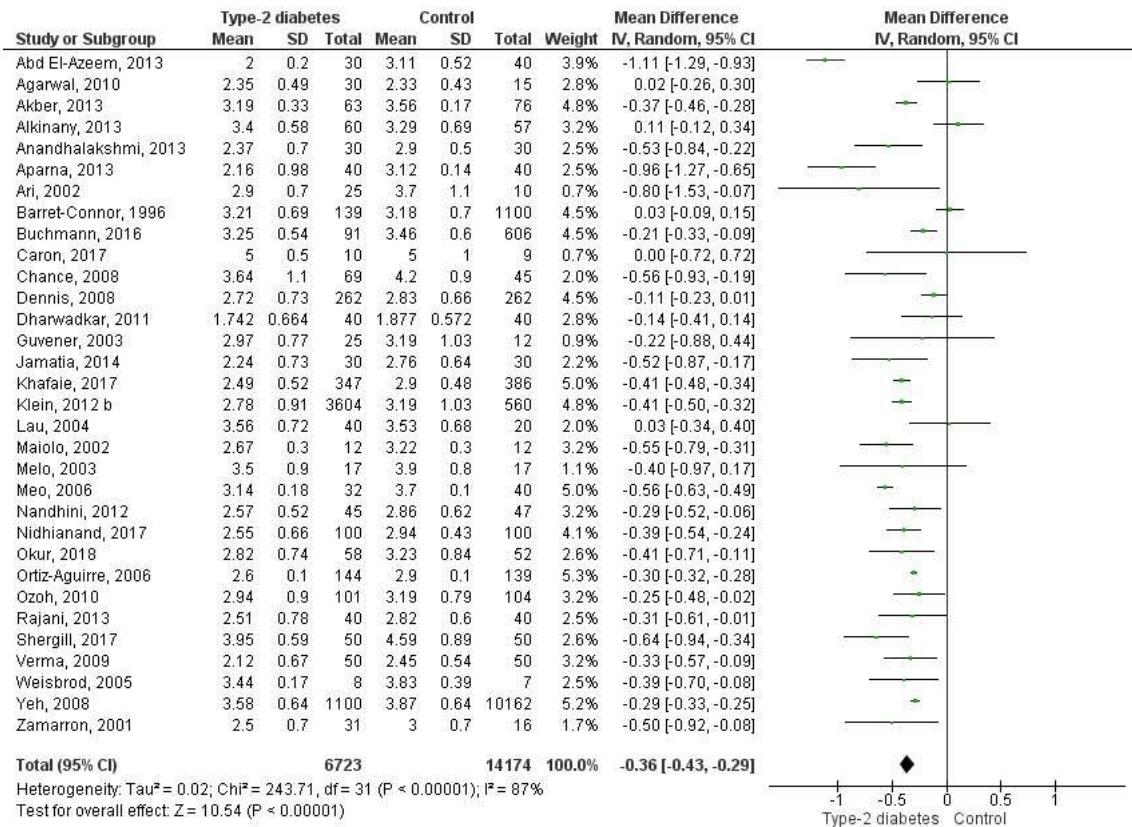


Figure S3. Forest plot of forced expiratory flow between 25% and 75% of total lung capacity (L/s)

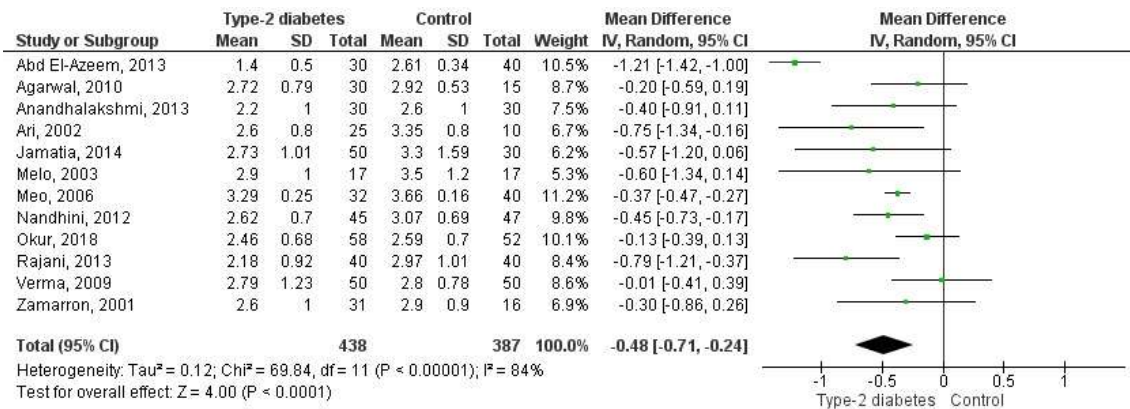


Figure S4. Forest plot of peak expiratory flow (L/s)

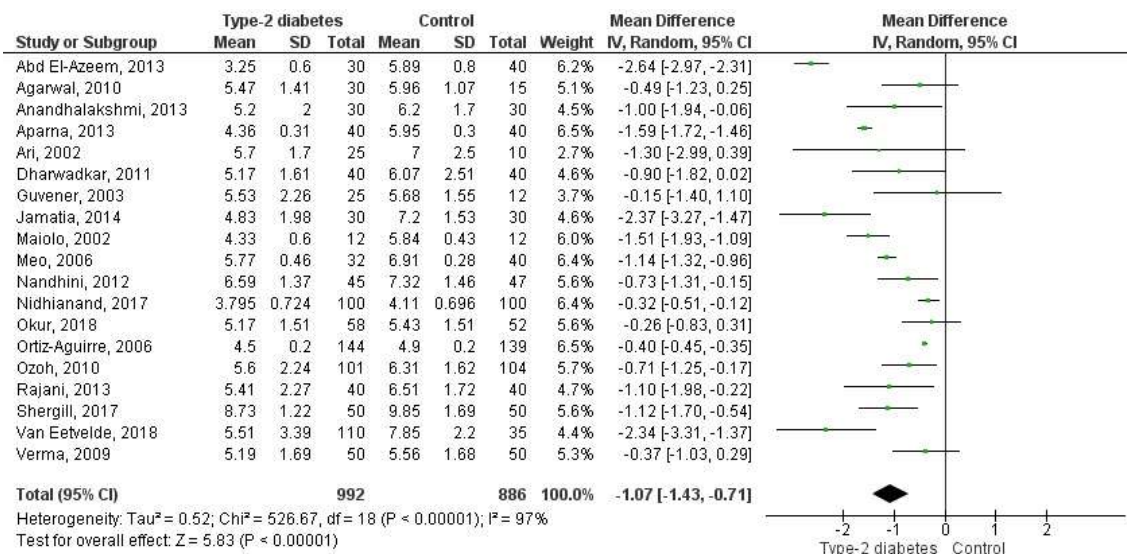


Figure S5. Forest plot of diffusion capacity of the lungs for carbon monoxide (mL/min/mm Hg)

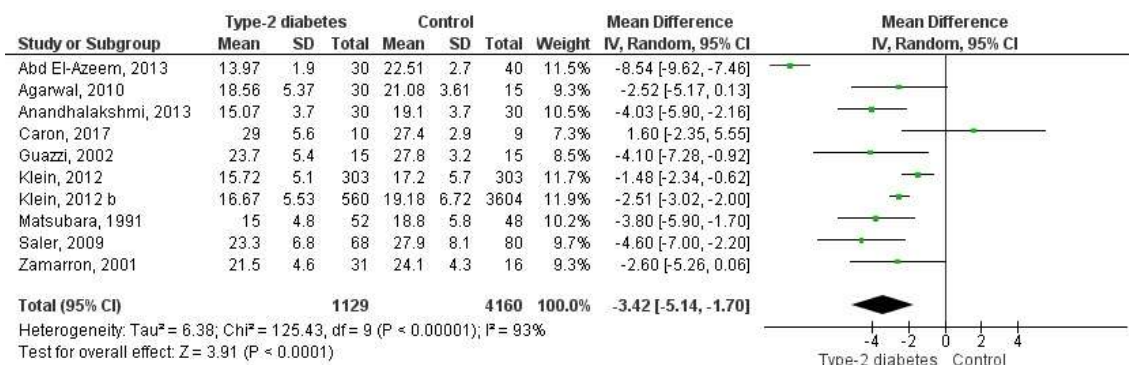


Figure S6. Funnel plot of FEV₁ (L), FVC (L), FEF_{25-75%} (L/s), PEF (L/s) and DL_{CO} (mL/min/mm Hg)

