SUPPLEMENTAL MATERIALS – PAP Guideline Meta-Analyses and Summary of Findings Tables

All Literature Search Terms: obstructive sleep apnea, obstructive sleep apnoea, positive airway pressure, continuous positive airway pressure, automated, auto-titrating, auto-CPAP, auto nCPAP, auto-continuous, self-adjusting, APAP, BPAP, bilevel positive airway pressure, BPAP, auto-BPAP, oronasal, interface, nasal pillows, nasal mask, masks, chin-strap, education, educational, behavior, behavioral, desensitization, cognitive behavioral therapy, cognitive, neurobehavioral, supportive therapy, self-efficacy, healthcare provider, nurse clinician, respiratory therapist, sleep physician, sleep specialist, motivation, humidified, humidification, humidifier, heated tubing, monitor, monitoring, telemedicine, telemonitoring, modem, chronometer, microprocessor, A-flex, flexible, airway, pressure, pressure relief, manual titration, in-laboratory, titration, autotitration, portable monitoring, home-based diagnosis, nasal CPAP, nCPAP, dipping, non-dipping, refractory hypertension, hypertension, blood pressure, glucose, hemoglobin A1c, pre-diabetes, diabetes, metabolic syndrome, insulin resistance, coronary artery disease, congestive heart failure, myocardial infarction, revascularization, percutaneous coronary intervention, cardiac catheterization, coronary artery bypass graft, heart failure, ejection fraction, echocardiogram, stroke, cerebral vascular event, transient ischemic attack, arrhythmia, atrial fibrillation, mortality, sudden cardiac death, cardiovascular, hospitalization, 30-day readmission, psychomotor vigilance test, memory, psychomotor function, executive function, learning, driving simulator, motor vehicle crashes, line crossing, quality of life, SF-36, FOSQ, SAQLI, Quebec sleep questionnaire, euroqol, EQ5D, sleepiness, MSLT, MWT, OSLER, PSQI, adherence, compliance, machine run time, side effects, AHI, and RDI

Broad-Based Search Terms: obstructive sleep apnea and positive airway pressure

Literature Search Limits: RCTS (all PICOs), observational studies (PICOs 1 MVC, 3, and 8 only), humans, English language, and adults

Inclusion Criteria: RCTs (all PICOs), observational studies (PICOs 1 MVC, 3, and 8 only), adult patients with OSA, study sample size ≥10, PAP therapy for at least 1 week (PICOs 8, 9 only), PAP therapy for at least 4 weeks (other PICOs), head-to-head studies of different PAP devices or PAP versus control condition, and reporting of at least one relevant outcome of interest.

Exclusion Criteria: observational studies (PICOs 1, 2, 4-7, 9-11), PAP withdrawal studies, patients with central sleep apnea, obesity hypoventilation, hypoventilation syndromes, major comorbidities, children and adolescents, non-PAP treatment, insufficient treatment duration, no outcomes of interest, or lack of appropriate control group.

Abbreviations:
AHI – apnea hypopnea index
APAP – autotitrating positive airway pressure
BP – blood pressure
BPAP – bilevel positive airway pressure
COWAT – controlled oral word association test
CPAP – continuous positive airway pressure
CV – cardiovascular
DBP – diastolic blood pressure
EQ5D – European quality of life index
ESS – Epworth sleepiness scale
FOSQ – functional outcomes of sleep questionnaire
HADs – health, anxiety, and depression scale
HF – heart failure
LVEF – left ventricle ejection fraction
MPP – modified pressure profile
MSLT – multiple sleep latency test
MVA – motor vehicle accident
MWT – maintenance of wakefulness test
OSLER – Oxford sleep resistance test
PAP -positive airway pressure
PASAT – paced auditory serial addition test
PICO – Patient, intervention, comparator, outcome
PSQI – Pittsburgh sleep quality index
PVT – psychomotor vigilance test
QSQ – Quebec sleepiness questionnaire

RCTs – randomized controlled trials
RDI – respiratory disturbance index
SAQLI – sleep apnea quality of life index
SBP – systolic blood pressure
SF 36 MCS – short form mental component summary score
SF-36 PCS – short form physical component summary score
SF-36 VS – short form vitality score

PAP vs. control conditions for the treatment of obstructive sleep apnea in adults

Figure S1. PAP vs. Control Conditions (AHI, events/hr)

	PAP			Control				Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI
Amaro 2012	8	6	12	39	15	12	8.3%	-31.00 [-40.14, -21.86]
Barnes 2004	4.8	4.7	89	20.3	10.4	90	11.1%	-15.50 [-17.86, -13.14]
Becker 2003	3.4	3.1	16	33.4	29.2	16	6.0%	-30.00 [-44.39, -15.61]
Hoyos 2012	3.8	12.4	28	39.6	15	24	9.1%	-35.80 [-43.36, -28.24]
Ip 2006	1.7	1.8	14	45.9	15.5	13	8.7%	-44.20 [-52.68, -35.72]
Lam 2007	2.8	6.4	34	20.5	14.6	33	10.1%	-17.70 [-23.13, -12.27]
Montasterio 2001	6	8	66	17	10	59	10.9%	-11.00 [-14.20, -7.80]
Nguyen 2010	2.2	1.5	10	37.4	23.3	10	5.9%	-35.20 [-49.67, -20.73]
Phillips 2011	6.8	14.8	16	40.7	13.3	13	7.8%	-33.90 [-44.14, -23.66]
Weaver 2012	0.9	1.3	113	14.6	12.3	110	11.1%	-13.70 [-16.01, -11.39]
Woodson 2003	4.6	2.7	26	13.6	6.4	28	11.0%	-9.00 [-11.59, -6.41]
Total (95% CI)			**424**			**408**	**100.0%**	**-23.41 [-28.51, -18.30]**

Heterogeneity: Tau² = 59.66; Chi² = 140.17, df = 10 (P < 0.00001); I² = 93%
Test for overall effect: Z = 8.99 (P < 0.00001)

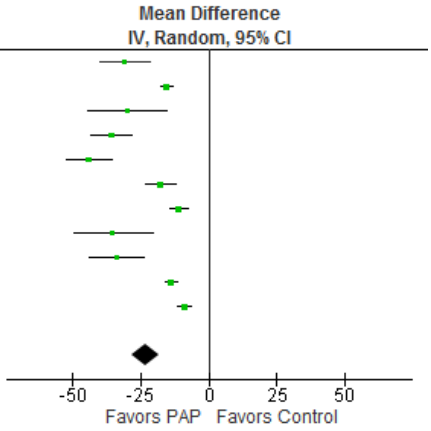


Figure S2. PAP Pre-treatment vs. Post-treatment (AHI, events/hr)

	Posttreatment			Pretreatment				Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI
Amaro 2012	8	6	12	38	14	12	8.8%	-30.00 [-38.62, -21.38]
Barnes 2004	4.8	4.7	89	21.3	12.3	89	9.7%	-16.50 [-19.24, -13.76]
Becker 2003	3.4	3.1	16	62.5	8	16	9.5%	-59.10 [-63.30, -54.90]
Hoyos 2012	3.8	12.4	28	38.5	14.7	34	9.2%	-34.70 [-41.45, -27.95]
Ip 2006	1.7	1.8	14	47.7	15.3	14	8.9%	-46.00 [-54.07, -37.93]
Lam 2007	2.8	6.4	34	23.8	11.1	34	9.5%	-21.00 [-25.31, -16.69]
Montasterio 2001	6	8	66	20	6	66	9.7%	-14.00 [-16.41, -11.59]
Nguyen 2010	2.2	1.5	10	38.8	21.4	10	7.8%	-36.60 [-49.90, -23.30]
Phillips 2011	6.8	14.8	16	41.2	23.9	16	7.7%	-34.40 [-48.17, -20.63]
Weaver 2012	0.9	1.3	113	12.8	6.4	121	9.7%	-11.90 [-13.07, -10.73]
Woodson 2003	4.6	2.7	26	19.8	9.9	27	9.6%	-15.20 [-19.08, -11.32]
Total (95% CI)			**424**			**439**	**100.0%**	**-28.59 [-36.78, -20.40]**

Heterogeneity: Tau² = 178.76; Chi² = 567.06, df = 10 (P < 0.00001); I² = 98%
Test for overall effect: Z = 6.84 (P < 0.00001)

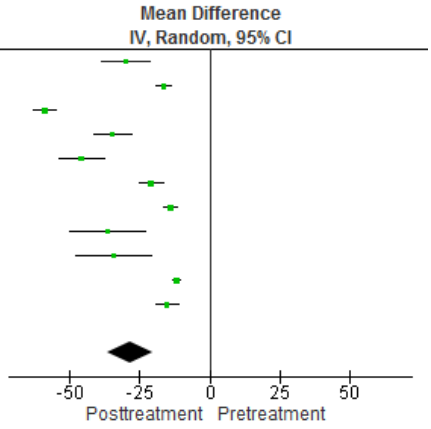


Figure S3. PAP vs. Control Conditions (ESS)

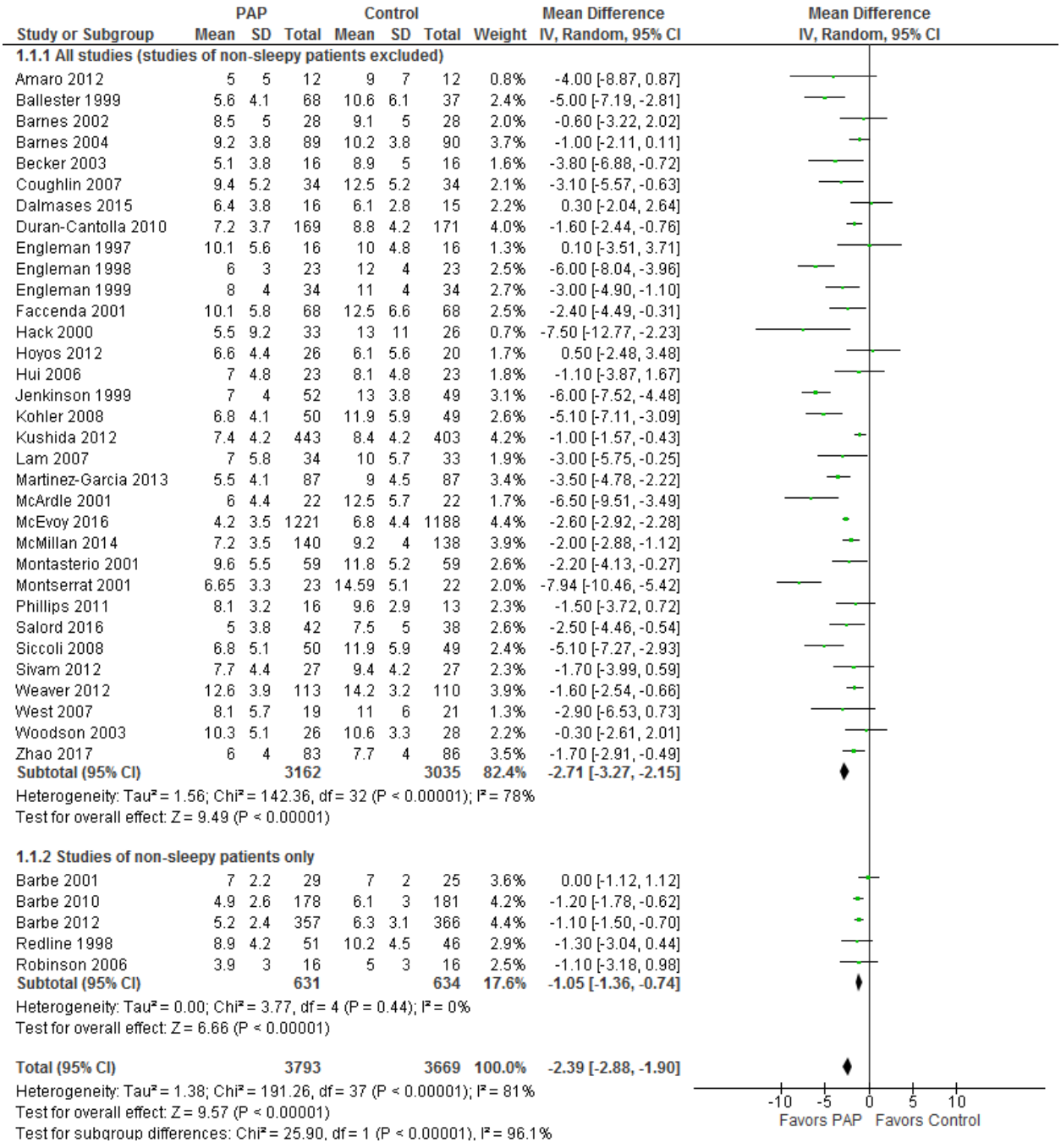


Figure S4. PAP vs. Control Conditions (Osler & MWT, min)

Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Barnes 2004	30	8	80	28	8	80	16.6%	0.25 [-0.06, 0.56]
Engleman 1999	16.2	10.6	34	14.4	8.5	34	13.5%	0.19 [-0.29, 0.66]
Hack 2000	33.5	6.8	26	24.2	8.1	33	12.0%	1.21 [0.65, 1.78]
Jenkinson 1999	32.9	7.1	52	23.5	8.2	49	14.5%	1.22 [0.79, 1.65]
Kohler 2008	40	5.2	50	38	7.6	49	15.0%	0.31 [-0.09, 0.70]
McMillan 2014	27.8	11.6	110	23.8	13.4	115	17.5%	0.32 [0.05, 0.58]
West 2007	32.5	13	19	27.3	11	21	10.9%	0.43 [-0.20, 1.05]
Total (95% CI)			**371**			**381**	**100.0%**	**0.54 [0.23, 0.84]**

Heterogeneity: Tau² = 0.12; Chi² = 23.87, df = 6 (P = 0.0006); I² = 75%
Test for overall effect: Z = 3.41 (P = 0.0006)

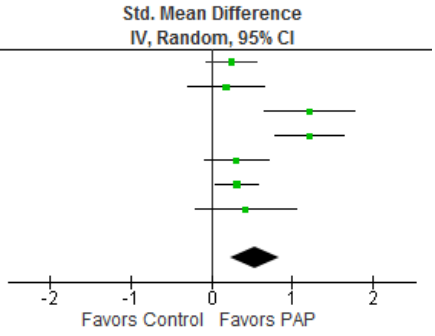


Figure S5. PAP vs. Control Conditions (MSLT, min)

Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control conditions Mean	Control conditions SD	Control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Barbe 2001	13	5	29	11	5	25	13.7%	2.00 [-0.67, 4.67]
Barnes 2002	10.7	4.8	28	11.7	4.8	28	15.0%	-1.00 [-3.51, 1.51]
Engleman 1994	7.2	8.1	17	6.1	8.1	15	3.8%	1.10 [-4.52, 6.72]
Engleman 1997	10	4.8	16	9.9	6	16	7.8%	0.10 [-3.66, 3.86]
Engleman 1998	9.2	3.9	23	6.8	4.3	23	16.3%	2.40 [0.03, 4.77]
Montasterio 2001	10	5	66	11	5	59	24.0%	-1.00 [-2.76, 0.76]
Redline 1998	10.9	5	51	11.3	5.4	46	19.5%	-0.40 [-2.48, 1.68]
Total (95% CI)			**230**			**212**	**100.0%**	**0.25 [-0.89, 1.38]**

Heterogeneity: Tau² = 0.60; Chi² = 8.12, df = 6 (P = 0.23); I² = 26%
Test for overall effect: Z = 0.42 (P = 0.67)

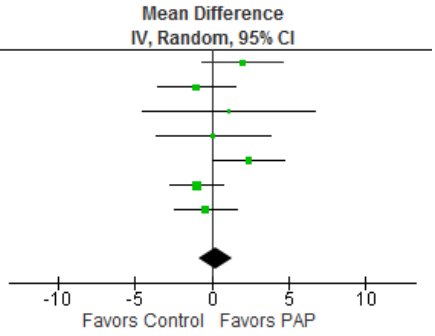


Figure S6. PAP vs. Control Conditions (FOSQ & SAQLI)

Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Barbe 2001	108	10.8	29	110	10	25	6.0%	-0.19 [-0.73, 0.35]
Barnes 2004	3.3	0.94	89	3.3	0.95	90	9.8%	0.00 [-0.29, 0.29]
Craig 2012	4.9	1.1	167	4.8	1.2	163	11.2%	0.09 [-0.13, 0.30]
Faccenda 2001	12.4	4.1	68	11.6	5.8	68	9.0%	0.16 [-0.18, 0.50]
Lam 2007	5.9	0.6	34	5	0.6	33	5.9%	1.48 [0.94, 2.03]
McMillan 2014	5.5	1.1	121	5.1	1.1	119	10.5%	0.36 [0.11, 0.62]
Montasterio 2001	106	20	66	102	21	59	8.8%	0.19 [-0.16, 0.55]
Montserrat 2001	109.4	12.5	23	100.7	20.6	22	5.4%	0.50 [-0.09, 1.10]
Phillips 2011	16	2.8	16	16.7	2.8	13	4.1%	-0.24 [-0.98, 0.49]
Siccoli 2008	4.4	1.1	50	3.8	1.6	49	8.0%	0.43 [0.04, 0.83]
Weaver 2012	14.9	3	113	14.3	2.7	110	10.3%	0.21 [-0.05, 0.47]
West 2007	5.1	1	19	4.4	1	21	4.9%	0.69 [0.05, 1.33]
Woodson 2003	17.5	2.4	26	17.2	2	28	6.1%	0.13 [-0.40, 0.67]
Total (95% CI)			**821**			**800**	**100.0%**	**0.27 [0.09, 0.45]**

Heterogeneity: Tau² = 0.06; Chi² = 33.50, df = 12 (P = 0.0008); I² = 64%
Test for overall effect: Z = 2.99 (P = 0.003)

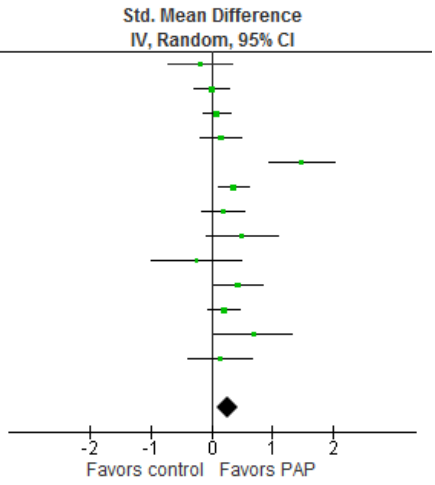


Figure S7. PAP vs. Control Conditions (SF-36 PCS)

Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
Barbe 2001	51	5.4	29	50	5.4	25	4.0%	1.00 [-1.89, 3.89]
Barnes 2002	75.6	27.2	28	77	27.2	28	0.2%	-1.40 [-15.65, 12.85]
Engleman 1999	79	22.8	34	72.2	26	34	0.2%	6.80 [-4.82, 18.42]
Jenkinson 1999	49.4	10.1	52	45.5	10.4	49	2.1%	3.90 [-0.10, 7.90]
Lam 2007	77.5	18.6	34	67.7	25.3	33	0.3%	9.80 [-0.86, 20.46]
Lewis 2017	44.6	10.2	99	42.9	9.3	99	4.6%	1.70 [-1.02, 4.42]
McEvoy 2016	46.9	8	1218	45.9	8.1	1189	81.5%	1.00 [0.36, 1.64]
Montserrat 2001	50.7	36.9	23	47.2	41.7	22	0.1%	3.50 [-19.54, 26.54]
Siccoli 2008	70.8	18.5	50	70	18.8	49	0.6%	0.80 [-6.55, 8.15]
Woodson 2003	50.8	7	28	51.4	7.9	26	2.1%	-0.60 [-4.59, 3.39]
Zhao 2017	46.2	9.6	81	42.9	8.7	85	4.3%	3.30 [0.51, 6.09]
Total (95% CI)			**1676**			**1639**	**100.0%**	**1.20 [0.61, 1.78]**

Heterogeneity: Tau² = 0.00; Chi² = 8.79, df = 10 (P = 0.55); I² = 0%
Test for overall effect: Z = 4.04 (P < 0.0001)

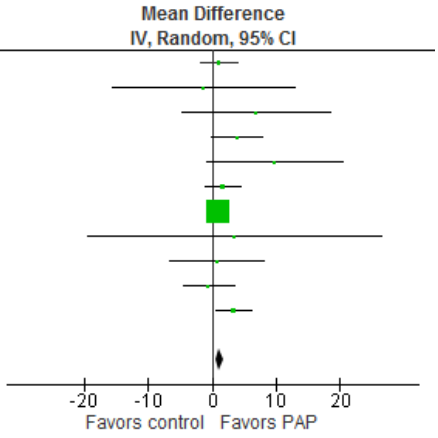


Figure S8. PAP vs. Control Conditions (SF-36 MCS)

Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
Barbe 2001	51	10.8	29	52	10	25	6.7%	-1.00 [-6.55, 4.55]
Barnes 2002	77	26.5	28	80.3	26.5	28	1.5%	-3.30 [-17.18, 10.58]
Craig 2012	52	9.8	165	48.5	11	158	14.3%	3.50 [1.22, 5.78]
Engleman 1999	74	21.2	34	68.2	23.8	34	2.5%	5.80 [-4.91, 16.51]
Jenkinson 1999	55.4	7	52	47.8	10.1	49	11.2%	7.60 [4.19, 11.01]
Lam 2007	73.8	21.6	34	71.5	24.7	33	2.3%	2.30 [-8.82, 13.42]
Lewis 2017	52.6	10	99	49.7	11	99	12.5%	2.90 [-0.03, 5.83]
McEvoy 2016	53.6	8	1218	52.4	8.8	1189	18.1%	1.20 [0.53, 1.87]
Montserrat 2001	49.5	11.5	23	53.6	7.5	22	6.6%	-4.10 [-9.75, 1.55]
Siccoli 2008	76.8	16.2	50	70.6	22.6	49	4.2%	6.20 [-1.56, 13.96]
Woodson 2003	49.2	8.6	28	47.1	8.3	26	8.6%	2.10 [-2.41, 6.61]
Zhao 2017	51.3	9.7	81	54	11.5	85	11.6%	-2.70 [-5.93, 0.53]
Total (95% CI)			**1841**			**1797**	**100.0%**	**1.86 [0.06, 3.66]**

Heterogeneity: Tau² = 4.55; Chi² = 30.52, df = 11 (P = 0.001); I² = 64%
Test for overall effect: Z = 2.02 (P = 0.04)

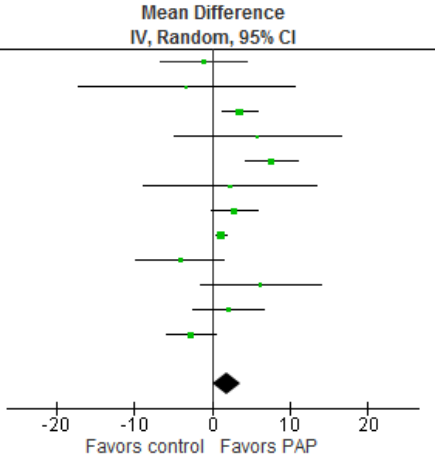


Figure S9. PAP vs. Control Conditions (SF-36 VS)

Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
Barnes 2002	61.2	21.5	28	61.4	21.5	28	4.9%	-0.20 [-11.46, 11.06]
Craig 2012	60.6	20.9	171	53.9	22.5	168	20.4%	6.70 [2.08, 11.32]
Engleman 1999	58	19	34	46	23	34	6.0%	12.00 [1.97, 22.03]
Lam 2007	62.6	16.9	34	57	16.1	33	9.1%	5.60 [-2.30, 13.50]
Lewis 2017	51.8	11.1	99	49.5	9.4	100	33.9%	2.30 [-0.56, 5.16]
Montserrat 2001	69.4	27.3	23	68.4	20.6	22	3.2%	1.00 [-13.09, 15.09]
Siccoli 2008	64.7	20.4	50	52.6	26.7	49	6.8%	12.10 [2.73, 21.47]
Zhao 2017	63.5	18.8	81	60.9	18.1	85	15.6%	2.60 [-3.02, 8.22]
Total (95% CI)			**520**			**519**	**100.0%**	**4.63 [2.03, 7.23]**

Heterogeneity: Tau² = 3.06; Chi² = 9.08, df = 7 (P = 0.25); I² = 23%
Test for overall effect: Z = 3.49 (P = 0.0005)

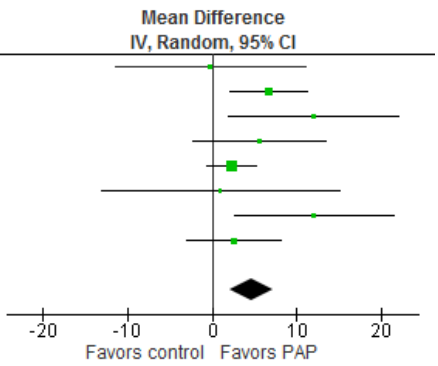


Figure S10. PAP vs. control conditions (change in nighttime SBP) [All patient types]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	-1	14.1	25	-1	12	25	5.5%	0.00 [-7.26, 7.26]
Barbe 2001	-1	10.8	29	-2	15	25	5.7%	1.00 [-6.07, 8.07]
Barnes 2002	2	25.5	28	3.2	10.3	28	2.9%	-1.20 [-11.39, 8.99]
Becker 2003	-11.4	17.2	16	1.2	14.9	16	2.4%	-12.60 [-23.75, -1.45]
de Oliveira 2014	-9.3	17.4	22	-0.5	17.6	23	2.8%	-8.80 [-19.03, 1.43]
Drager 2007	-3	9.5	12	1	9.5	12	5.0%	-4.00 [-11.60, 3.60]
Drager 2011	-7	8	18	4	9	18	8.9%	-11.00 [-16.56, -5.44]
Duran-Cantolla 2010	-4	13.5	169	0	14.5	171	24.4%	-4.00 [-6.98, -1.02]
Gottlieb 2014	-1.9	15.3	93	1.9	17.6	97	12.0%	-3.80 [-8.48, 0.88]
Hui 2006	-4.1	14.9	23	2.2	14.9	23	4.0%	-6.30 [-14.91, 2.31]
Lozano 2010	-1.9	19.3	29	3.8	17.3	35	3.6%	-5.70 [-14.77, 3.37]
Martinez-Garcia 2013	-6.6	16.1	98	-2.6	14.8	96	13.6%	-4.00 [-8.35, 0.35]
Muxfeldt 2015	1.2	17.7	46	1.8	17	60	6.4%	-0.60 [-7.28, 6.08]
Pedrosa 2013	1.6	14.2	19	2.7	16	16	2.9%	-1.10 [-11.21, 9.01]
Total (95% CI)			**627**			**645**	**100.0%**	**-4.21 [-5.96, -2.45]**

Heterogeneity: Tau² = 0.99; Chi² = 14.26, df = 13 (P = 0.36); I² = 9%
Test for overall effect: Z = 4.69 (P < 0.00001)

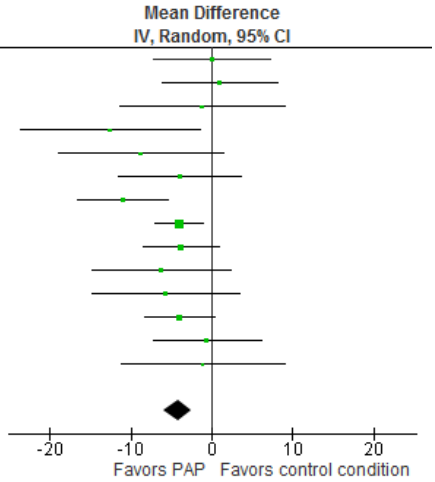


Figure S11. PAP vs. control conditions (change in nighttime DBP) [All patient types]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	-2	8	25	-1	6	25	7.7%	-1.00 [-4.92, 2.92]
Barbe 2001	-1	5.4	29	-1	5	25	10.9%	0.00 [-2.78, 2.78]
Barnes 2002	-2	14.6	28	1.9	14.9	28	2.8%	-3.90 [-11.63, 3.83]
Barnes 2004	0.5	8.5	89	-0.5	8.1	90	12.1%	1.00 [-1.43, 3.43]
Becker 2003	-8.5	13	16	1.9	12	16	2.3%	-10.40 [-19.07, -1.73]
de Oliveira 2014	-5	13.6	22	-1.5	14.6	23	2.5%	-3.50 [-11.74, 4.74]
Drager 2007	-4	8	12	-3	8.6	12	3.6%	-1.00 [-7.65, 5.65]
Drager 2011	-6	8	18	3	8.6	18	5.0%	-9.00 [-14.43, -3.57]
Duran-Cantolla 2010	-2	10	169	0	10	171	13.2%	-2.00 [-4.13, 0.13]
Gottlieb 2014	-2.1	8.2	93	2.2	9.8	97	11.6%	-4.30 [-6.87, -1.73]
Hui 2006	-3	11	23	0.9	9.6	23	4.3%	-3.90 [-9.87, 2.07]
Lozano 2010	-3.1	8.4	29	1.5	11.1	35	5.9%	-4.60 [-9.38, 0.18]
Martinez-Garcia 2013	-3.1	12	98	-1.1	12.4	96	8.9%	-2.00 [-5.43, 1.43]
Muxfeldt 2015	0.6	11.5	46	1	11.8	60	6.5%	-0.40 [-4.87, 4.07]
Pedrosa 2013	0.8	12	19	1.9	12.2	16	2.6%	-1.10 [-9.15, 6.95]
Total (95% CI)			**716**			**735**	**100.0%**	**-2.31 [-3.72, -0.91]**

Heterogeneity: Tau² = 2.71; Chi² = 23.68, df = 14 (P = 0.05); I² = 41%
Test for overall effect: Z = 3.23 (P = 0.001)

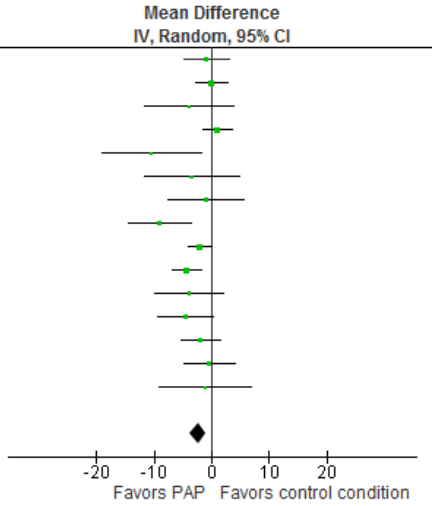


Figure S12. PAP vs. control conditions (change in daytime SBP) [All patient types]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	0	9	25	0	11	25	7.5%	0.00 [-5.57, 5.57]
Barbe 2001	-3	10.8	29	-1	10	25	7.5%	-2.00 [-7.55, 3.55]
Barnes 2002	-7	25.6	28	2.2	9.8	28	2.3%	-9.20 [-19.35, 0.95]
Becker 2003	-8	16	16	2.2	12.6	16	2.4%	-10.20 [-20.18, -0.22]
de Oliveira 2014	-8.8	21.6	22	-1.3	19.8	23	1.6%	-7.50 [-19.62, 4.62]
Drager 2007	-3	7.3	12	-2	10	12	4.8%	-1.00 [-8.01, 6.01]
Drager 2011	-5	6	18	3	11	18	6.9%	-8.00 [-13.79, -2.21]
Duran-Cantolla 2010	-3	13	169	0	12	171	28.5%	-3.00 [-5.66, -0.34]
Gottlieb 2014	-1.2	13.2	93	0.8	15.3	97	13.5%	-2.00 [-6.06, 2.06]
Lozano 2010	-4	16	29	1.2	12.1	35	4.7%	-5.20 [-12.27, 1.87]
Martinez-Garcia 2013	-3.2	13	98	-2.6	14.8	96	14.4%	-0.60 [-4.52, 3.32]
Muxfeldt 2015	1	16.5	46	0.4	16.6	60	5.8%	0.60 [-5.75, 6.95]
Total (95% CI)			**585**			**606**	**100.0%**	**-2.76 [-4.31, -1.20]**

Heterogeneity: Tau² = 0.36; Chi² = 11.53, df = 11 (P = 0.40); I² = 5%
Test for overall effect: Z = 3.47 (P = 0.0005)

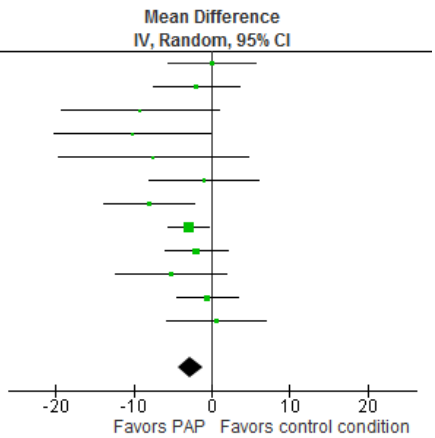


Figure S13. PAP vs. control conditions (change in daytime DBP) [All patient types]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	-1	5	25	-1	6	25	11.0%	0.00 [-3.06, 3.06]
Barbe 2001	-1	5.4	29	0	5	25	13.2%	-1.00 [-3.78, 1.78]
Barnes 2002	-5	25.6	28	2.1	9.8	28	1.0%	-7.10 [-17.25, 3.05]
Becker 2003	-9.6	14	16	0.5	11.5	16	1.4%	-10.10 [-18.98, -1.22]
de Oliveira 2014	-5	14.8	22	-1.3	15.2	23	1.4%	-3.70 [-12.47, 5.07]
Drager 2007	-4	5.7	12	-3	7.6	12	3.7%	-1.00 [-6.38, 4.38]
Drager 2011	-5	6	18	1	8	18	5.0%	-6.00 [-10.62, -1.38]
Duran-Cantolla 2010	-2	8	169	0	9	171	28.5%	-2.00 [-3.81, -0.19]
Gottlieb 2014	-2.2	8	93	1	9.9	97	15.4%	-3.20 [-5.75, -0.65]
Lozano 2010	0.1	11	29	0.9	6.4	35	5.2%	-0.80 [-5.33, 3.73]
Martinez-Garcia 2013	-3	12	98	-1.4	11.9	96	9.2%	-1.60 [-4.96, 1.76]
Muxfeldt 2015	-0.1	11.5	46	-0.2	12.2	60	5.2%	0.10 [-4.44, 4.64]
Total (95% CI)			**585**			**606**	**100.0%**	**-1.98 [-3.02, -0.93]**

Heterogeneity: Tau² = 0.14; Chi² = 11.45, df = 11 (P = 0.41); I² = 4%
Test for overall effect: Z = 3.72 (P = 0.0002)

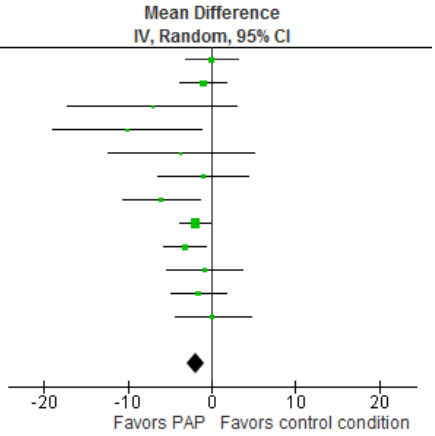


Figure S14. PAP vs. control conditions (change in 24-hr SBP) [All patient types]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Barbe 2001	-2	10.8	29	1	10	25	2.1%	-3.00 [-8.55, 2.55]
Barbe 2010	-6.3	15.3	178	-4.2	16.9	181	5.9%	-2.10 [-5.43, 1.23]
Barnes 2002	-0.7	8.1	28	-1.2	8.2	28	3.6%	0.50 [-3.77, 4.77]
Barnes 2004	0.8	10.4	89	1.7	10.4	90	7.0%	-0.90 [-3.95, 2.15]
Becker 2003	-9.5	16	16	1.1	16	16	0.5%	-10.60 [-21.69, 0.49]
Campos-Rodriguez 2006	-1.6	12.8	34	0.6	16.1	34	1.4%	-2.20 [-9.11, 4.71]
Craig 2012	1.4	12.5	154	0.3	12	156	8.8%	1.10 [-1.63, 3.83]
Cross 2008	-2.1	16.6	27	1.6	18.2	27	0.8%	-3.70 [-12.99, 5.59]
de Oliveira 2014	-8.9	19.6	22	-0.7	20.2	23	0.5%	-8.20 [-19.83, 3.43]
Drager 2011	-5	6	18	4	10	18	2.3%	-9.00 [-14.39, -3.61]
Duran-Cantolla 2010	-3	13	169	0	12	171	9.2%	-3.00 [-5.66, -0.34]
Egea 2008	-1.6	12.1	20	0	23	25	0.6%	-1.60 [-12.06, 8.86]
Faccenda 2001	126.9	10.7	68	128.2	8.2	68	6.4%	-1.30 [-4.50, 1.90]
Gottlieb 2014	-1.3	13.2	90	1.1	15.4	97	3.9%	-2.40 [-6.50, 1.70]
Hui 2006	-2.4	13.9	23	-2	12	23	1.2%	-0.40 [-7.90, 7.10]
Lozano 2010	-1.3	15.1	29	1.7	12.8	35	1.4%	-3.00 [-9.94, 3.94]
Martinez-Garcia 2013	-4.7	12.4	98	-2.2	15.3	96	4.3%	-2.50 [-6.42, 1.42]
McEvoy 2016	0.7	17	1166	1.5	17	1158	34.2%	-0.80 [-2.18, 0.58]
Montasterio 2001	-4	15.4	66	-2	16	59	2.1%	-2.00 [-7.52, 3.52]
Muxfeldt 2015	0.8	16.2	46	-0.4	16.6	60	1.7%	1.20 [-5.09, 7.49]
Pepperell 2002	-2.3	14.6	48	1	18	47	1.5%	-3.30 [-9.90, 3.30]
Robinson 2006	-3.3	16.2	16	-2.7	17.4	16	0.5%	-0.60 [-12.25, 11.05]
Ryan 2005	-4.6	17.2	10	0.6	16.6	8	0.3%	-5.20 [-20.88, 10.48]
Total (95% CI)			**2444**			**2461**	**100.0%**	**-1.47 [-2.28, -0.66]**

Heterogeneity: Tau² = 0.00; Chi² = 20.62, df = 22 (P = 0.54); I² = 0%
Test for overall effect: Z = 3.57 (P = 0.0004)

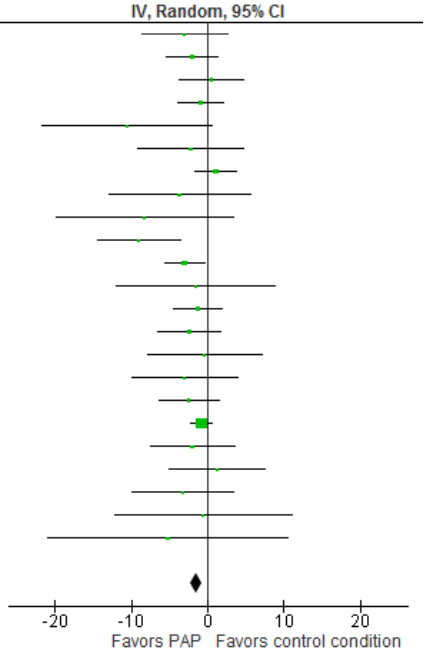
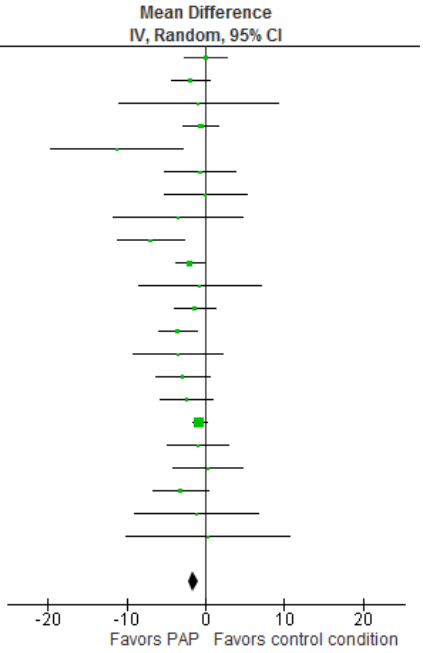


Figure S15. PAP vs. control conditions (change in 24-hr DBP) [All patient types]*

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Barbe 2001	0	5.4	29	0	5	25	5.2%	0.00 [-2.78, 2.78]
Barbe 2010	-4.1	11.3	178	-2.2	11.6	181	6.9%	-1.90 [-4.27, 0.47]
Barnes 2002	-2.1	25.5	28	-1.2	10.3	28	0.4%	-0.90 [-11.09, 9.29]
Barnes 2004	0.4	7.5	89	1	7.6	90	7.8%	-0.60 [-2.81, 1.61]
Becker 2003	-10.3	13.5	16	1	10.8	16	0.6%	-11.30 [-19.77, -2.83]
Campos-Rodriguez 2006	-1.5	9.3	34	-0.8	9.8	34	2.0%	-0.70 [-5.24, 3.84]
Cross 2008	1.9	10.1	27	1.9	9.7	27	1.5%	0.00 [-5.28, 5.28]
de Oliveira 2014	-5	13.6	22	-1.5	14.6	23	0.6%	-3.50 [-11.74, 4.74]
Drager 2011	-5	5.5	18	2	7.5	18	2.2%	-7.00 [-11.30, -2.70]
Duran-Cantolla 2010	-2	8.5	169	0	9	171	10.6%	-2.00 [-3.86, -0.14]
Egea 2008	0.4	11.4	20	1.2	15.2	25	0.7%	-0.80 [-8.58, 6.98]
Faccenda 2001	77.8	8.2	68	79.2	7.4	68	5.7%	-1.40 [-4.03, 1.23]
Gottlieb 2014	-2.2	7.6	90	1.3	9.4	97	6.5%	-3.50 [-5.94, -1.06]
Hui 2006	-2.4	10.1	23	1.1	9.6	23	1.3%	-3.50 [-9.19, 2.19]
Lozano 2010	-2	7.4	29	0.9	6.8	35	3.3%	-2.90 [-6.41, 0.61]
Martinez-Garcia 2013	-2.9	11.3	98	-0.5	12.4	96	3.6%	-2.40 [-5.74, 0.94]
McEvoy 2016	-0.9	11	1166	-0.1	11	1158	31.8%	-0.80 [-1.69, 0.09]
Montasterio 2001	-1	11	66	0	11	59	2.7%	-1.00 [-4.86, 2.86]
Muxfeldt 2015	-0.2	11.2	46	-0.5	12	60	2.1%	0.30 [-4.14, 4.74]
Pepperell 2002	-2.4	8.8	48	0.8	8.8	47	3.2%	-3.20 [-6.74, 0.34]
Robinson 2006	-1.1	11.4	16	0.1	11.4	16	0.7%	-1.20 [-9.10, 6.70]
Ryan 2005	-4	10	10	-4.3	12	8	0.4%	0.30 [-10.07, 10.67]
Total (95% CI)			**2290**			**2305**	**100.0%**	**-1.58 [-2.23, -0.93]**

Heterogeneity: Tau² = 0.14; Chi² = 22.26, df = 21 (P = 0.38); I² = 6%
Test for overall effect: Z = 4.76 (P < 0.00001)



*Change scores were compared except for Faccenda 2001 in which post-treatment values were compared

Figure S16. PAP vs. control conditions (change in mean 24-hr BP) [All patient types]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Becker 2003	-9.8	13.4	16	0.6	11	16	2.1%	-10.40 [-18.89, -1.91]
Campos-Rodriguez 2006	-1.2	10.1	34	-0.3	10.4	34	6.4%	-0.90 [-5.77, 3.97]
Duran-Cantolla 2010	-2	8.5	169	0	9	171	44.0%	-2.00 [-3.86, -0.14]
Gottlieb 2014	-1.7	8.4	90	1.3	10.3	97	21.1%	-3.00 [-5.69, -0.31]
Hui 2006	-2.4	9.8	23	1.3	10.1	23	4.6%	-3.70 [-9.45, 2.05]
Martinez-Garcia 2013	-4.1	12.4	98	-0.8	14.5	96	10.6%	-3.30 [-7.10, 0.50]
Pepperell 2002	-2.5	9.6	48	0.8	10.8	47	9.0%	-3.30 [-7.41, 0.81]
Robinson 2006	-2	12	16	-1.2	12.4	16	2.1%	-0.80 [-9.26, 7.66]
Total (95% CI)			**494**			**500**	**100.0%**	**-2.63 [-3.86, -1.39]**

Heterogeneity: Tau² = 0.00; Chi² = 4.75, df = 7 (P = 0.69); I² = 0%
Test for overall effect: Z = 4.17 (P < 0.0001)

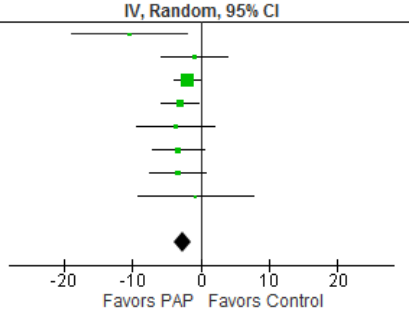


Figure S17. PAP vs. control conditions (change in nighttime SBP) [Resistant hypertensive patients]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
de Oliveira 2014	-9.3	17.4	22	-0.5	17.6	23	7.8%	-8.80 [-19.03, 1.43]
Lozano 2010	-1.9	19.3	29	3.8	17.3	35	9.9%	-5.70 [-14.77, 3.37]
Martinez-Garcia 2013	-6.6	16.1	98	-2.6	14.8	98	43.4%	-4.00 [-8.33, 0.33]
Muxfeldt 2015	1.2	17.7	46	1.8	1.7	60	30.9%	-0.60 [-5.73, 4.53]
Pedrosa 2013	1.6	14.2	19	2.7	16	16	8.0%	-1.10 [-11.21, 9.01]
Total (95% CI)			**214**			**232**	**100.0%**	**-3.26 [-6.11, -0.41]**

Heterogeneity: Tau² = 0.00; Chi² = 2.72, df = 4 (P = 0.60); I² = 0%
Test for overall effect: Z = 2.24 (P = 0.03)

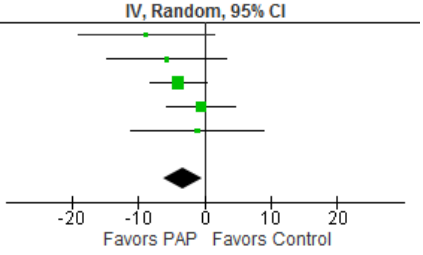


Figure S18. PAP vs. control conditions (change in nighttime DBP) [Resistant hypertensive patients]

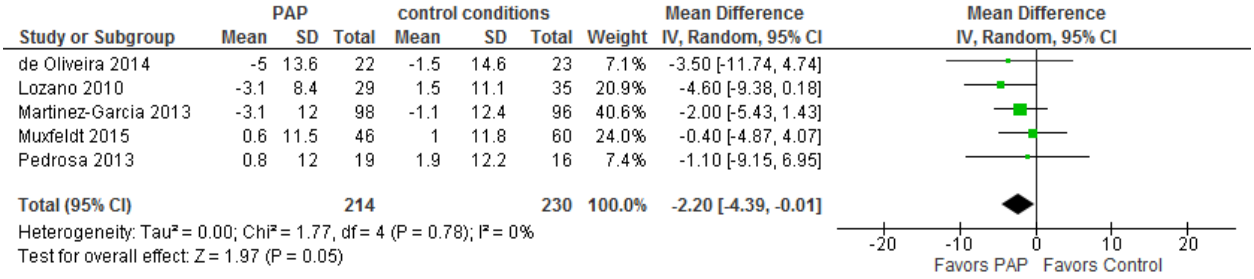


Figure S19. PAP vs. control conditions (change in daytime SBP) [Resistant hypertensive patients]

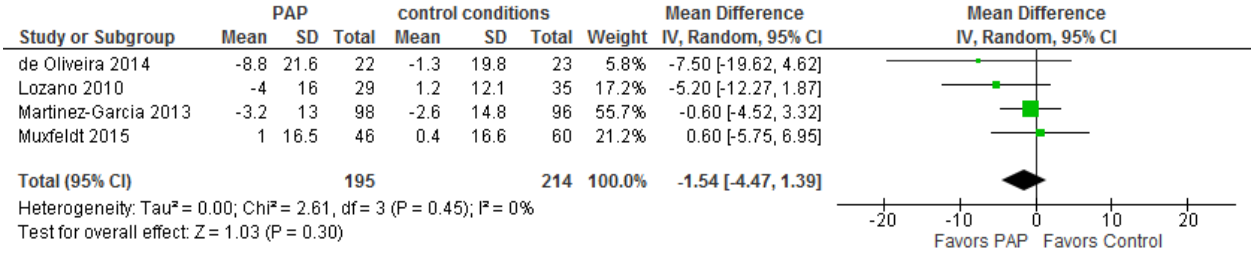


Figure S20. PAP vs. control conditions (change in daytime DBP) [Resistant hypertensive patients]

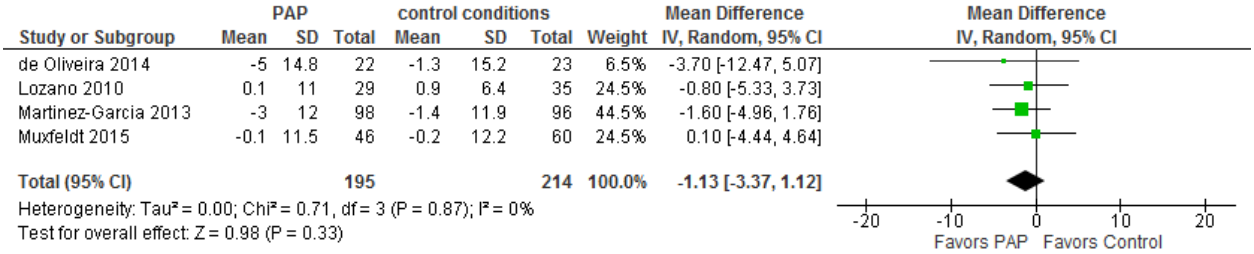


Figure S21. PAP vs. control conditions (change in 24-hr SBP) [Resistant hypertensive patients]

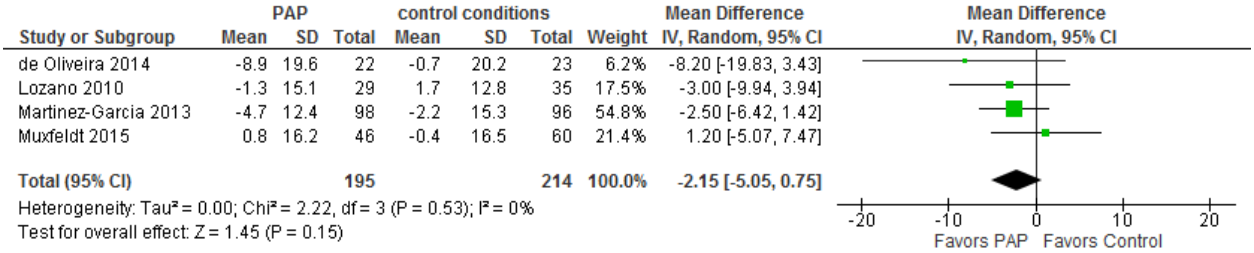


Figure S22. PAP vs. control conditions (change in 24-hr DBP) [Resistant hypertensive patients]

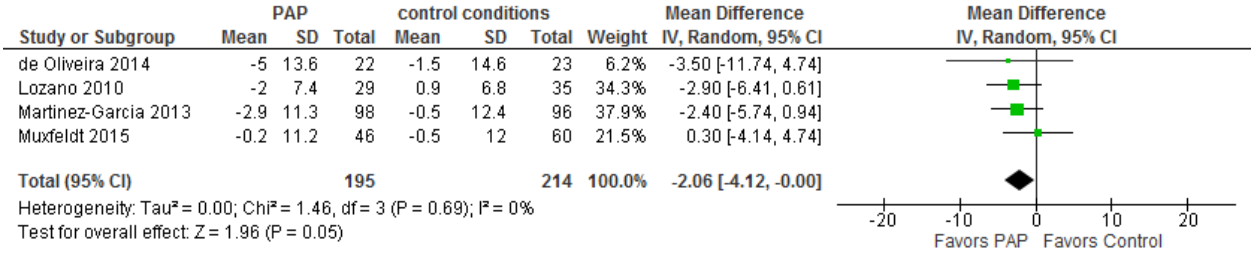


Figure S23. PAP vs. control conditions (change in nighttime SBP) [Hypertensive patients]

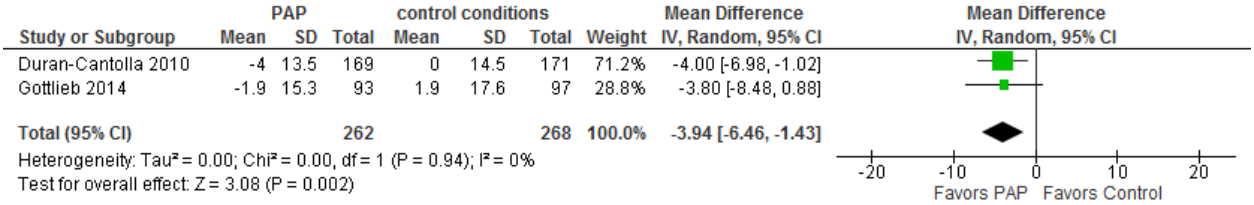


Figure S24. PAP vs. control conditions (change in nighttime DBP) [Hypertensive patients]

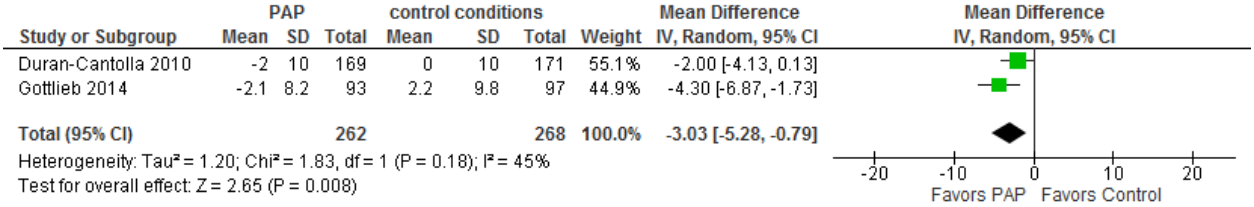


Figure S25. PAP vs. control conditions (change in daytime SBP) [Hypertensive patients]

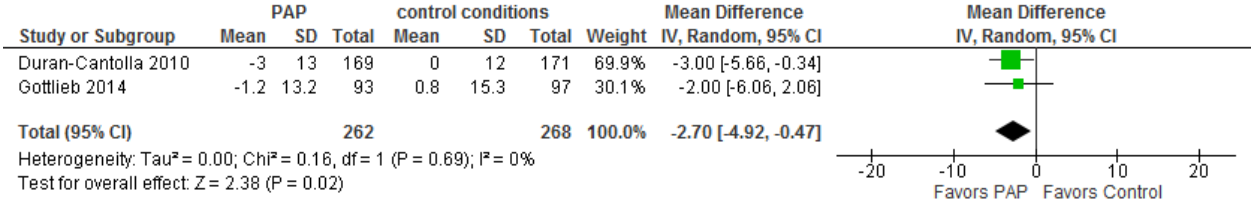


Figure S26. PAP vs. control conditions (change in daytime DBP) [Hypertensive patients]

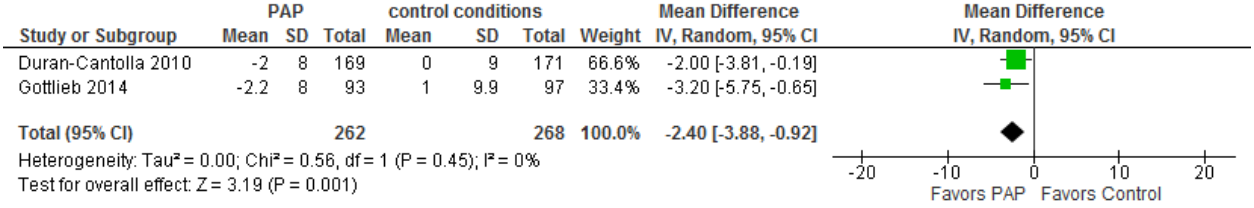


Figure S27. PAP vs. control conditions (change in 24-hr SBP) [Hypertensive patients]

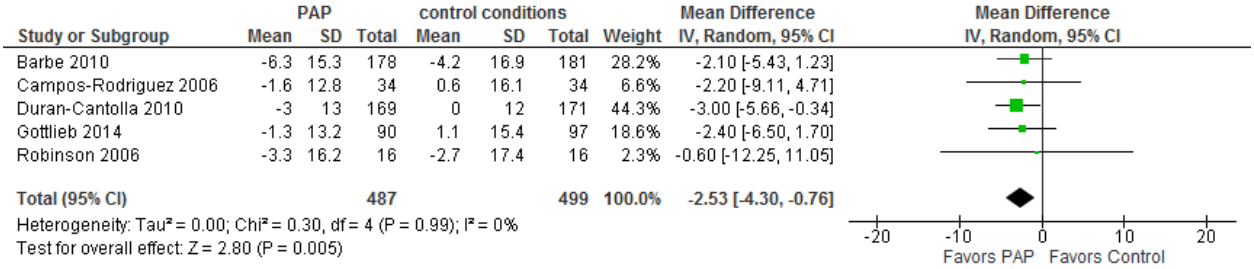


Figure S28. PAP vs. control conditions (change in 24-hr DBP) [Hypertensive patients]

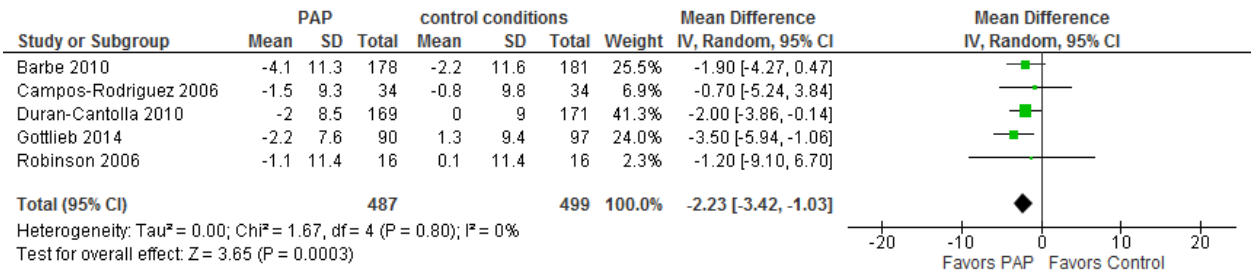


Figure S29. PAP vs. control conditions (change in mean 24-hr BP) [Hypertensive patients]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Campos-Rodriguez 2006	-1.2	10.1	34	-0.3	10.4	34	8.7%	-0.90 [-5.77, 3.97]
Duran-Cantolla 2010	-2	8.5	169	0	9	171	59.7%	-2.00 [-3.86, -0.14]
Gottlieb 2014	-1.7	8.4	90	1.3	10.3	97	28.7%	-3.00 [-5.69, -0.31]
Robinson 2006	-2	12	16	-1.2	12.4	16	2.9%	-0.80 [-9.26, 7.66]
Total (95% CI)			**309**			**318**	**100.0%**	**-2.16 [-3.59, -0.72]**

Heterogeneity: Tau² = 0.00; Chi² = 0.76, df = 3 (P = 0.86); I² = 0%
Test for overall effect: Z = 2.94 (P = 0.003)

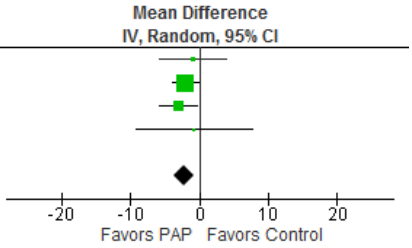


Figure S30. PAP vs. control conditions (change in nighttime SBP) [Normotensive patients]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	-1	14.1	25	-1	12	25	52.3%	0.00 [-7.26, 7.26]
Drager 2007	-3	9.5	12	1	9.5	12	47.7%	-4.00 [-11.60, 3.60]
Total (95% CI)			**37**			**37**	**100.0%**	**-1.91 [-7.16, 3.34]**

Heterogeneity: Tau² = 0.00; Chi² = 0.56, df = 1 (P = 0.46); I² = 0%
Test for overall effect: Z = 0.71 (P = 0.48)

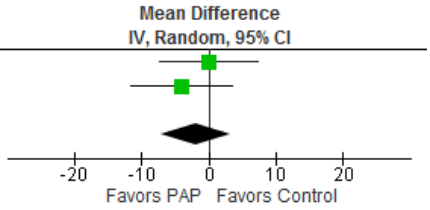


Figure S31. PAP vs. control conditions (change in nighttime DBP) [Normotensive patients]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	-2	8	25	-1	6	25	74.2%	-1.00 [-4.92, 2.92]
Drager 2007	-4	8	12	-3	8.6	12	25.8%	-1.00 [-7.65, 5.65]
Total (95% CI)			**37**			**37**	**100.0%**	**-1.00 [-4.38, 2.38]**

Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 1.00); I² = 0%
Test for overall effect: Z = 0.58 (P = 0.56)

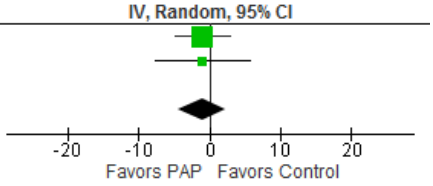


Figure S32. PAP vs. control conditions (change in daytime SBP) [Normotensive patients]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	0	9	25	0	11	25	61.3%	0.00 [-5.57, 5.57]
Drager 2007	-3	7.3	12	-2	10	12	38.7%	-1.00 [-8.01, 6.01]
Total (95% CI)			**37**			**37**	**100.0%**	**-0.39 [-4.75, 3.97]**

Heterogeneity: Tau² = 0.00; Chi² = 0.05, df = 1 (P = 0.83); I² = 0%
Test for overall effect: Z = 0.17 (P = 0.86)

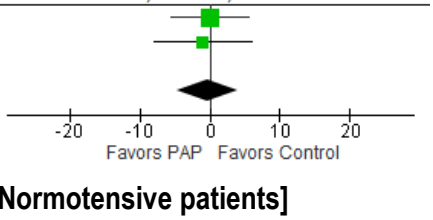


Figure S33. PAP vs. control conditions (change in daytime DBP) [Normotensive patients]

Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	-1	5	25	-1	6	25	75.5%	0.00 [-3.06, 3.06]
Drager 2007	-4	5.7	12	-3	7.6	12	24.5%	-1.00 [-6.38, 4.38]
Total (95% CI)			**37**			**37**	**100.0%**	**-0.24 [-2.91, 2.42]**

Heterogeneity: Tau² = 0.00; Chi² = 0.10, df = 1 (P = 0.75); I² = 0%
Test for overall effect: Z = 0.18 (P = 0.86)

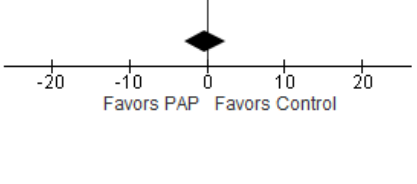


Figure S34. PAP vs. control conditions (CV events) [RCTs]

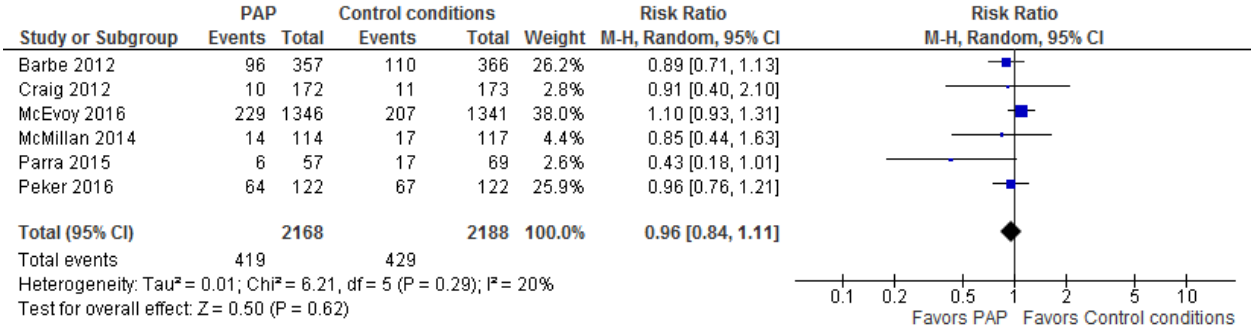


Figure S35. PAP vs. control conditions (CV events) [non-RCTs]

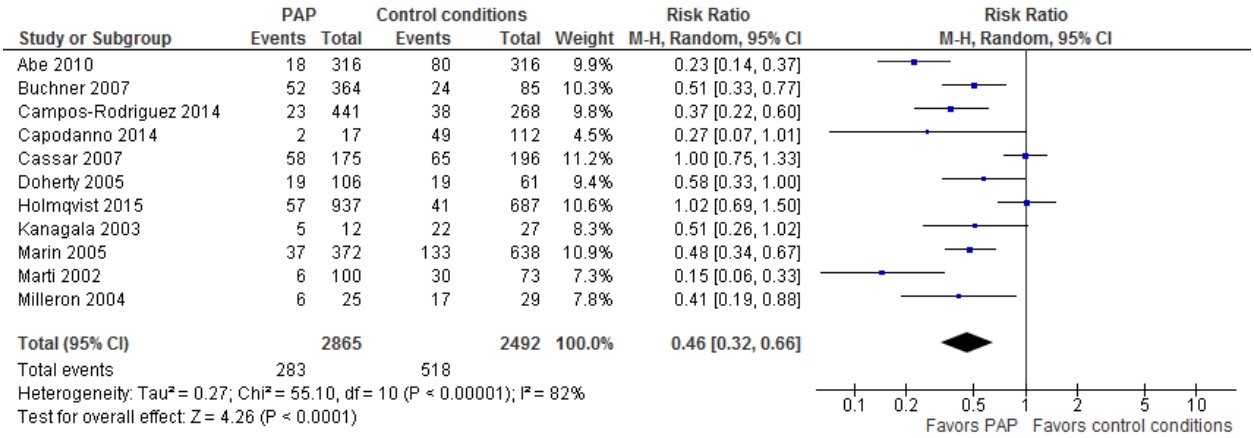


Figure S36. PAP vs. control conditions (All-cause mortality) [RCTs]

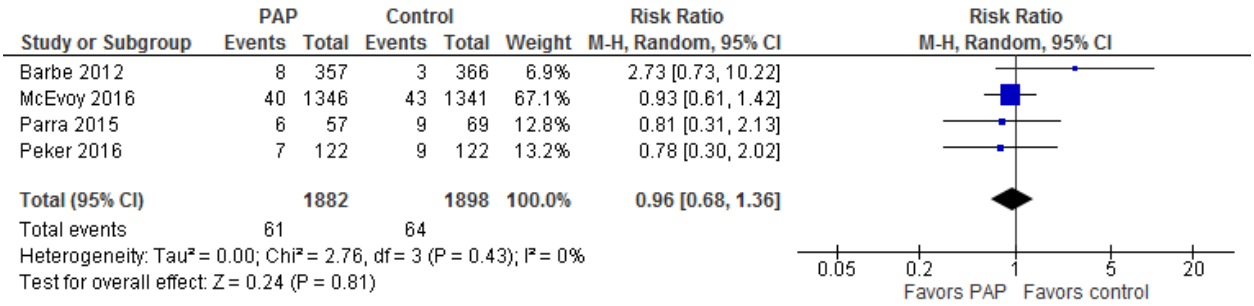


Figure S37. PAP vs. control conditions (All-cause mortality) [non-RCTs, all patients]

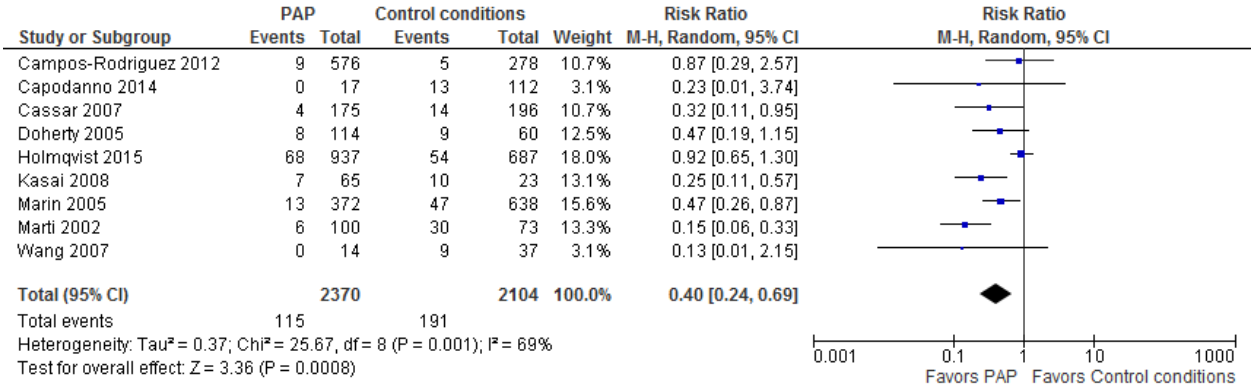


Figure S38. PAP vs. control conditions (All-cause mortality) [non-RCTs, patients with HF]

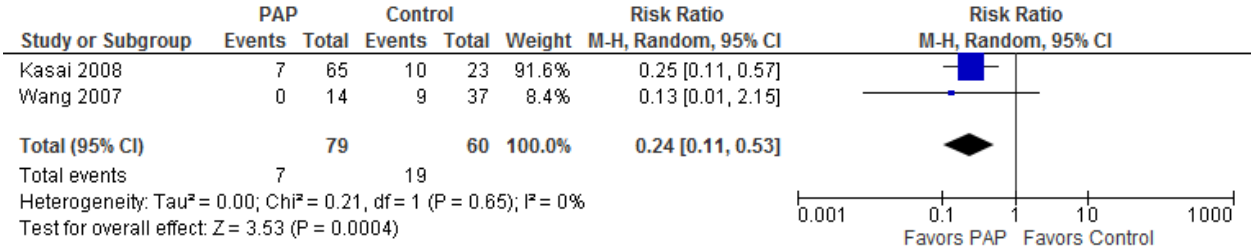


Figure S39. PAP vs. control conditions (All-cause mortality) [non-RCTs, patients without HF]

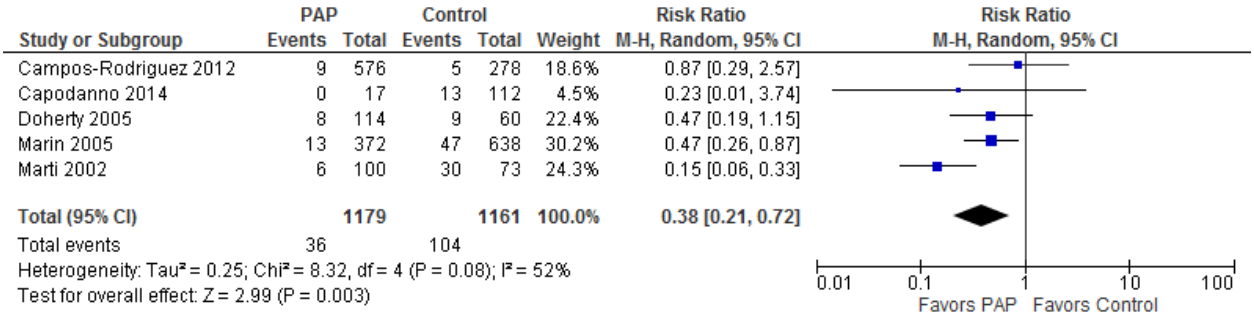


Figure S40. PAP vs. Control Conditions (change in Executive Function, Shifting)

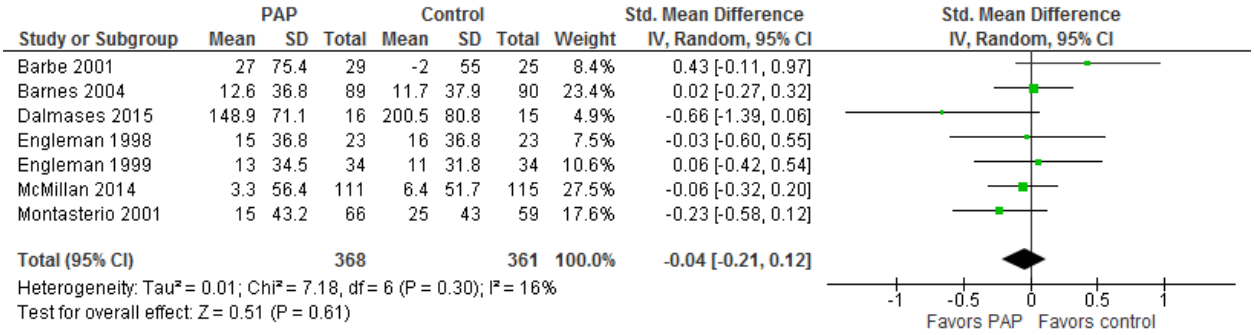


Figure S41. PAP vs. Control Conditions (change in Executive Function, Updating)

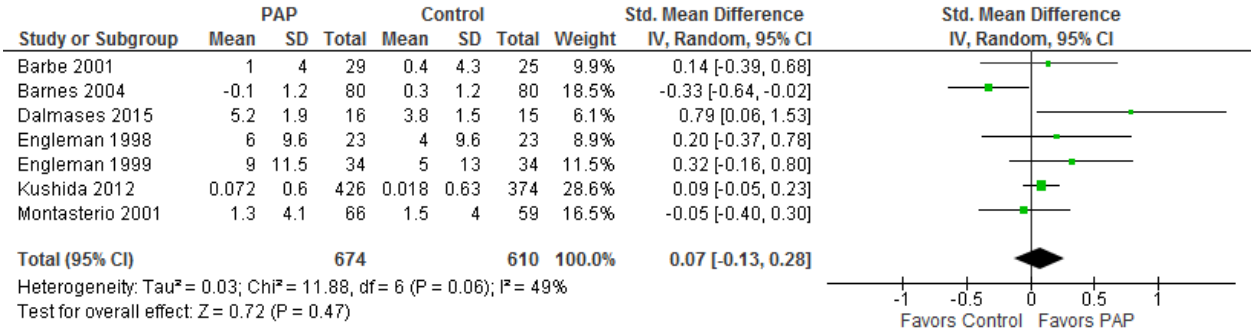


Figure S42. PAP vs. Control Conditions (change in Executive Function, Fluid Reasoning)

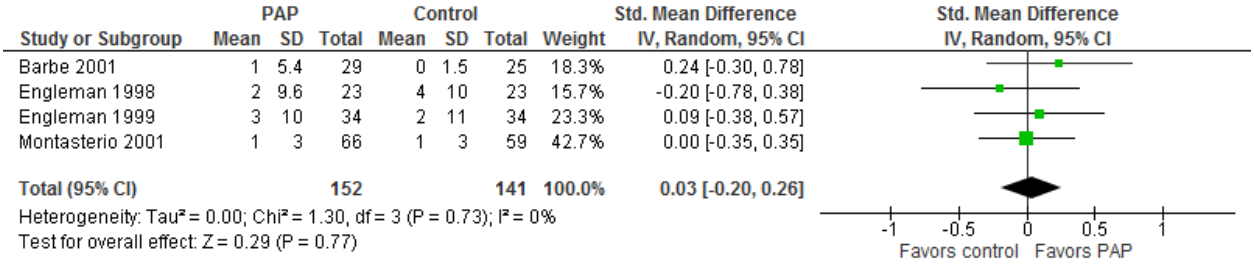


Figure S43. PAP vs. Control Conditions (change in Processing Speed)

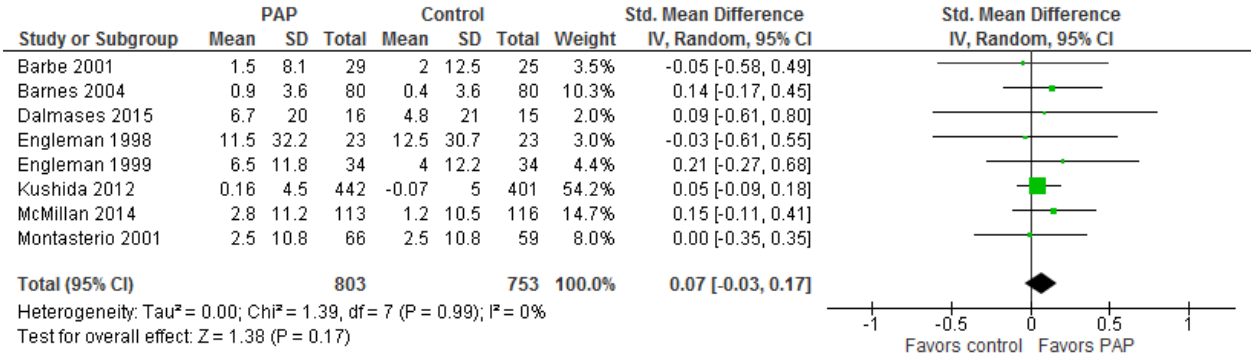


Figure S44. PAP vs. Control Conditions (change in Attention/Vigilance)

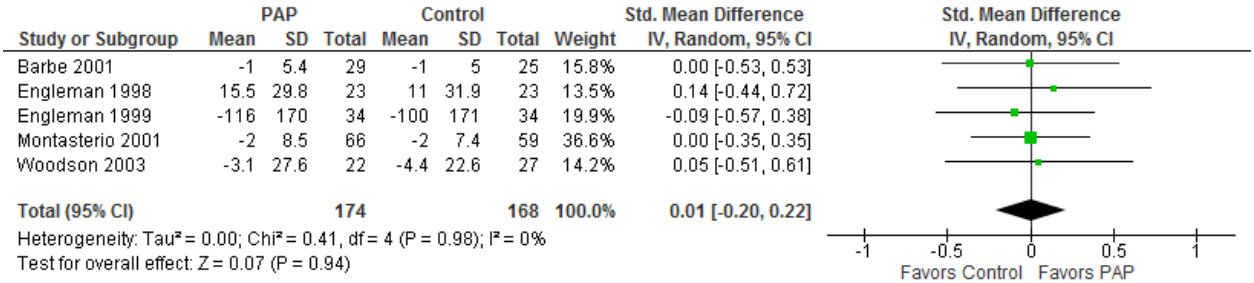


Figure S45. PAP vs. Control Conditions (change in Memory)

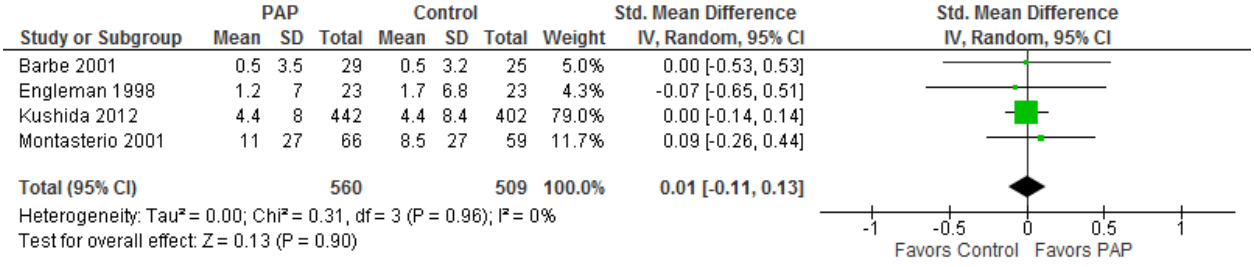


Figure S46. PAP vs. Control Conditions (change in Intelligence)

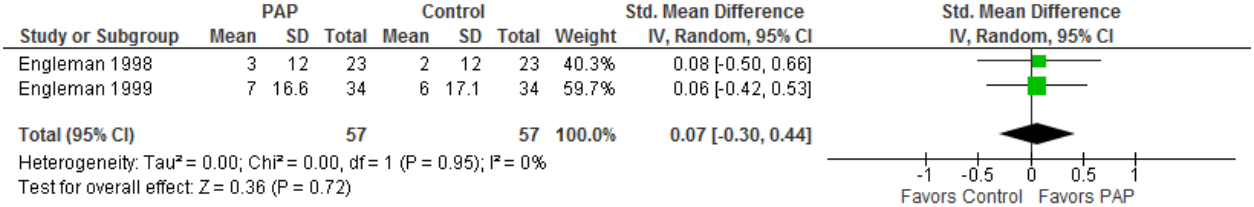
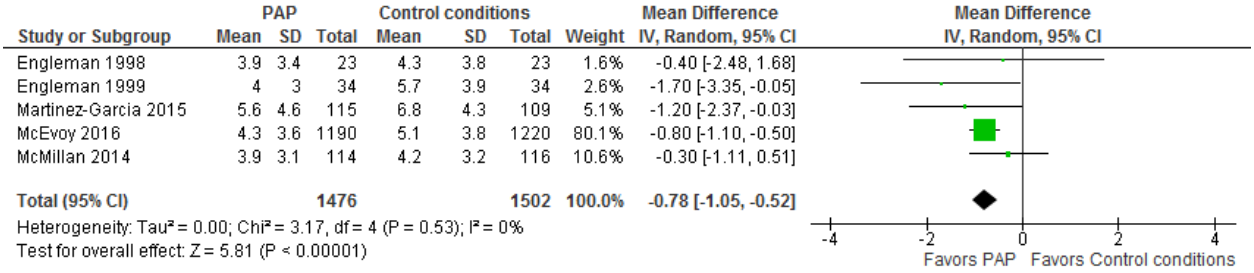


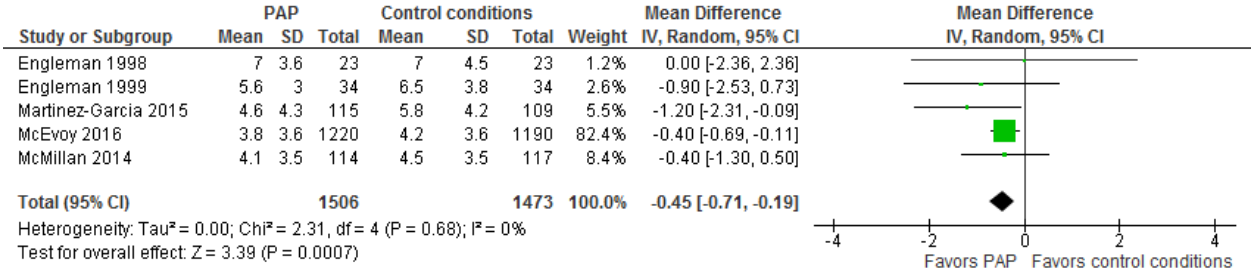
Figure S47. PAP vs. Control Conditions (HADS Depression)



Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control conditions Mean	Control conditions SD	Control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Engleman 1998	3.9	3.4	23	4.3	3.8	23	1.6%	-0.40 [-2.48, 1.68]
Engleman 1999	4	3	34	5.7	3.9	34	2.6%	-1.70 [-3.35, -0.05]
Martinez-Garcia 2015	5.6	4.6	115	6.8	4.3	109	5.1%	-1.20 [-2.37, -0.03]
McEvoy 2016	4.3	3.6	1190	5.1	3.8	1220	80.1%	-0.80 [-1.10, -0.50]
McMillan 2014	3.9	3.1	114	4.2	3.2	116	10.6%	-0.30 [-1.11, 0.51]
Total (95% CI)			**1476**			**1502**	**100.0%**	**-0.78 [-1.05, -0.52]**

Heterogeneity: Tau² = 0.00; Chi² = 3.17, df = 4 (P = 0.53); I² = 0%
Test for overall effect: Z = 5.81 (P < 0.00001)

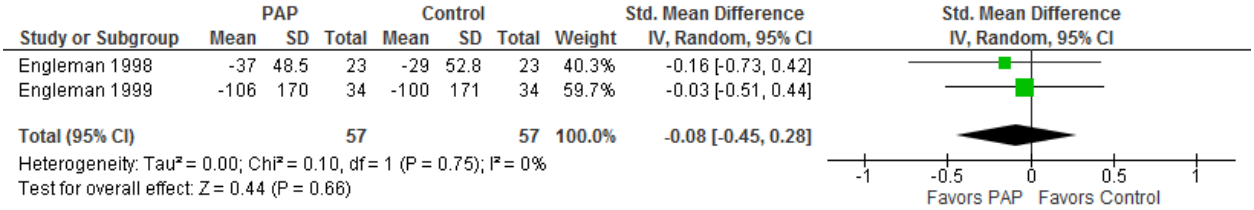
Figure S48. PAP vs. Control Conditions (HADS Anxiety)



Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control conditions Mean	Control conditions SD	Control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Engleman 1998	7	3.6	23	7	4.5	23	1.2%	0.00 [-2.36, 2.36]
Engleman 1999	5.6	3	34	6.5	3.8	34	2.6%	-0.90 [-2.53, 0.73]
Martinez-Garcia 2015	4.6	4.3	115	5.8	4.2	109	5.5%	-1.20 [-2.31, -0.09]
McEvoy 2016	3.8	3.6	1220	4.2	3.6	1190	82.4%	-0.40 [-0.69, -0.11]
McMillan 2014	4.1	3.5	114	4.5	3.5	117	8.4%	-0.40 [-1.30, 0.50]
Total (95% CI)			**1506**			**1473**	**100.0%**	**-0.45 [-0.71, -0.19]**

Heterogeneity: Tau² = 0.00; Chi² = 2.31, df = 4 (P = 0.68); I² = 0%
Test for overall effect: Z = 3.39 (P = 0.0007)

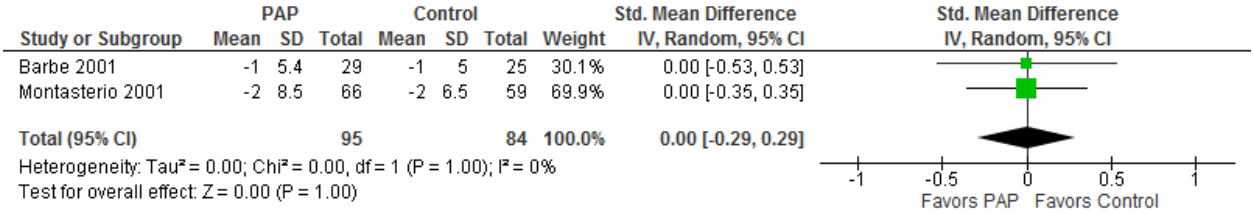
Figure S49. PAP vs. Control Conditions (change in SteerClear, Obstacles hit)



Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Engleman 1998	-37	48.5	23	-29	52.8	23	40.3%	-0.16 [-0.73, 0.42]
Engleman 1999	-106	170	34	-100	171	34	59.7%	-0.03 [-0.51, 0.44]
Total (95% CI)			**57**			**57**	**100.0%**	**-0.08 [-0.45, 0.28]**

Heterogeneity: Tau² = 0.00; Chi² = 0.10, df = 1 (P = 0.75); I² = 0%
Test for overall effect: Z = 0.44 (P = 0.66)

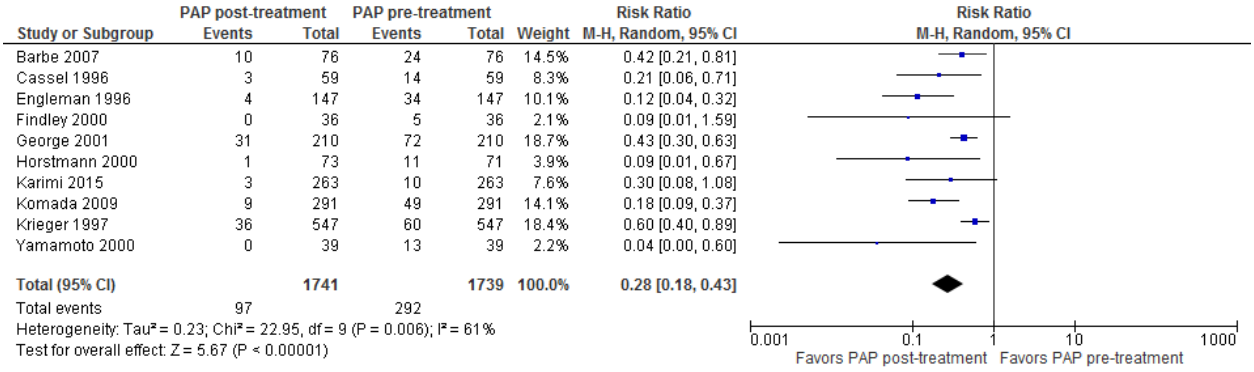
Figure S50. PAP vs. Control Conditions (change in SteerClear, % Obstacles hit)



Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Barbe 2001	-1	5.4	29	-1	5	25	30.1%	0.00 [-0.53, 0.53]
Montasterio 2001	-2	8.5	66	-2	6.5	59	69.9%	0.00 [-0.35, 0.35]
Total (95% CI)			**95**			**84**	**100.0%**	**0.00 [-0.29, 0.29]**

Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 1.00); I² = 0%
Test for overall effect: Z = 0.00 (P = 1.00)

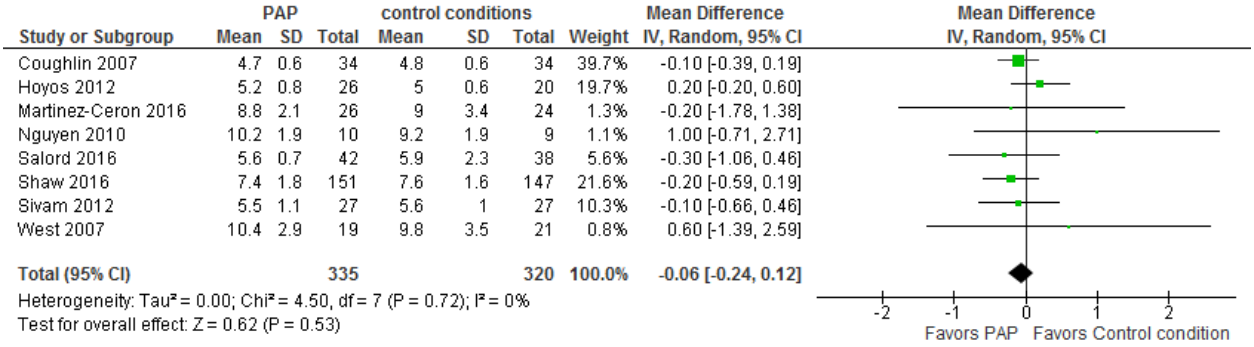
Figure S51. PAP pre-treatment vs. PAP post-treatment (MVC Risk Ratio)[non-RCTs]



Study or Subgroup	PAP post-treatment Events	PAP post-treatment Total	PAP pre-treatment Events	PAP pre-treatment Total	Weight	Risk Ratio M-H, Random, 95% CI
Barbe 2007	10	76	24	76	14.5%	0.42 [0.21, 0.81]
Cassel 1996	3	59	14	59	8.3%	0.21 [0.06, 0.71]
Engleman 1996	4	147	34	147	10.1%	0.12 [0.04, 0.32]
Findley 2000	0	36	5	36	2.1%	0.09 [0.01, 1.59]
George 2001	31	210	72	210	18.7%	0.43 [0.30, 0.63]
Horstmann 2000	1	73	11	71	3.9%	0.09 [0.01, 0.67]
Karimi 2015	3	263	10	263	7.6%	0.30 [0.08, 1.08]
Komada 2009	9	291	49	291	14.1%	0.18 [0.09, 0.37]
Krieger 1997	36	547	60	547	18.4%	0.60 [0.40, 0.89]
Yamamoto 2000	0	39	13	39	2.2%	0.04 [0.00, 0.60]
Total (95% CI)		**1741**		**1739**	**100.0%**	**0.28 [0.18, 0.43]**
Total events	97		292			

Heterogeneity: Tau² = 0.23; Chi² = 22.95, df = 9 (P = 0.006); I² = 61%
Test for overall effect: Z = 5.67 (P < 0.00001)

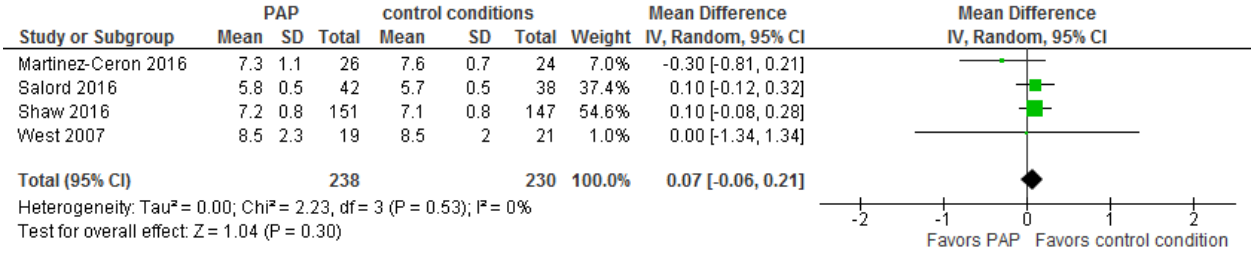
Figure S52. PAP vs. control conditions (Fasting glucose, mmol/l)



Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Coughlin 2007	4.7	0.6	34	4.8	0.6	34	39.7%	-0.10 [-0.39, 0.19]
Hoyos 2012	5.2	0.8	26	5	0.6	20	19.7%	0.20 [-0.20, 0.60]
Martinez-Ceron 2016	8.8	2.1	26	9	3.4	24	1.3%	-0.20 [-1.78, 1.38]
Nguyen 2010	10.2	1.9	10	9.2	1.9	9	1.1%	1.00 [-0.71, 2.71]
Salord 2016	5.6	0.7	42	5.9	2.3	38	5.6%	-0.30 [-1.06, 0.46]
Shaw 2016	7.4	1.8	151	7.6	1.6	147	21.6%	-0.20 [-0.59, 0.19]
Sivam 2012	5.5	1.1	27	5.6	1	27	10.3%	-0.10 [-0.66, 0.46]
West 2007	10.4	2.9	19	9.8	3.5	21	0.8%	0.60 [-1.39, 2.59]
Total (95% CI)			**335**			**320**	**100.0%**	**-0.06 [-0.24, 0.12]**

Heterogeneity: Tau² = 0.00; Chi² = 4.50, df = 7 (P = 0.72); I² = 0%
Test for overall effect: Z = 0.62 (P = 0.53)

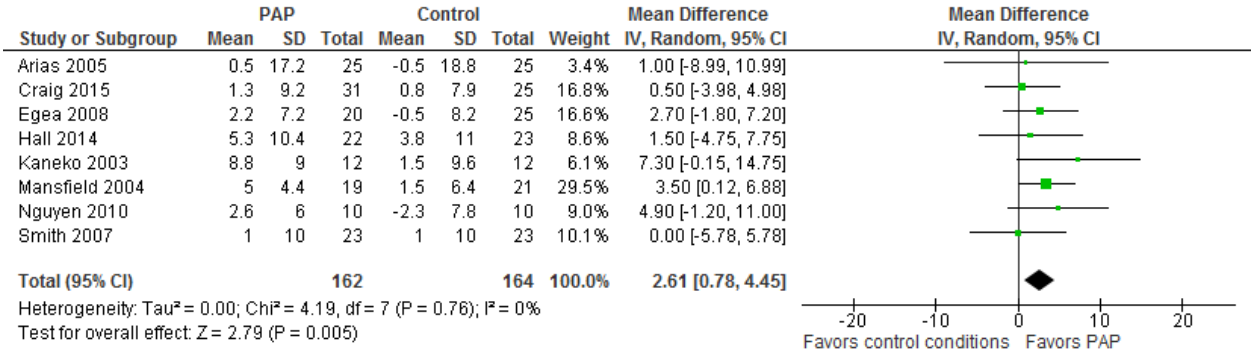
Figure S53. PAP vs. control conditions (Hemoglobin A1C, %)



Study or Subgroup	PAP Mean	PAP SD	PAP Total	control conditions Mean	control conditions SD	control conditions Total	Weight	Mean Difference IV, Random, 95% CI
Martinez-Ceron 2016	7.3	1.1	26	7.6	0.7	24	7.0%	-0.30 [-0.81, 0.21]
Salord 2016	5.8	0.5	42	5.7	0.5	38	37.4%	0.10 [-0.12, 0.32]
Shaw 2016	7.2	0.8	151	7.1	0.8	147	54.6%	0.10 [-0.08, 0.28]
West 2007	8.5	2.3	19	8.5	2	21	1.0%	0.00 [-1.34, 1.34]
Total (95% CI)			**238**			**230**	**100.0%**	**0.07 [-0.06, 0.21]**

Heterogeneity: Tau² = 0.00; Chi² = 2.23, df = 3 (P = 0.53); I² = 0%
Test for overall effect: Z = 1.04 (P = 0.30)

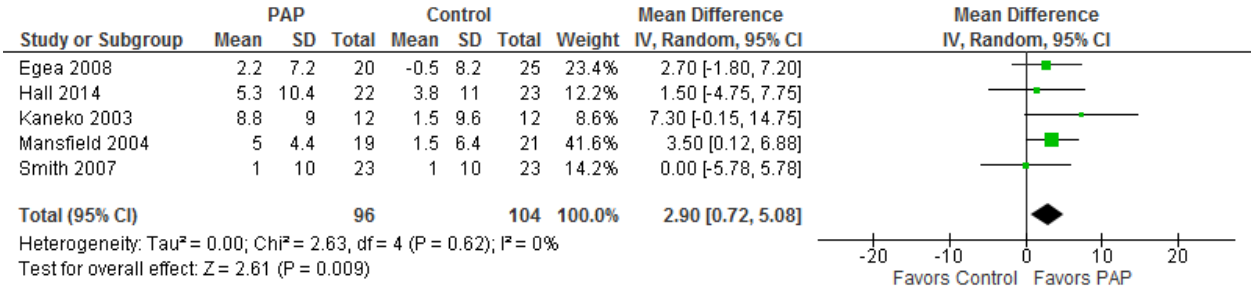
Figure S54. PAP vs. control conditions (change in LVEF, %) [All patients]



Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
Arias 2005	0.5	17.2	25	-0.5	18.8	25	3.4%	1.00 [-8.99, 10.99]
Craig 2015	1.3	9.2	31	0.8	7.9	25	16.8%	0.50 [-3.98, 4.98]
Egea 2008	2.2	7.2	20	-0.5	8.2	25	16.6%	2.70 [-1.80, 7.20]
Hall 2014	5.3	10.4	22	3.8	11	23	8.6%	1.50 [-4.75, 7.75]
Kaneko 2003	8.8	9	12	1.5	9.6	12	6.1%	7.30 [-0.15, 14.75]
Mansfield 2004	5	4.4	19	1.5	6.4	21	29.5%	3.50 [0.12, 6.88]
Nguyen 2010	2.6	6	10	-2.3	7.8	10	9.0%	4.90 [-1.20, 11.00]
Smith 2007	1	10	23	1	10	23	10.1%	0.00 [-5.78, 5.78]
Total (95% CI)			**162**			**164**	**100.0%**	**2.61 [0.78, 4.45]**

Heterogeneity: Tau² = 0.00; Chi² = 4.19, df = 7 (P = 0.76); I² = 0%
Test for overall effect: Z = 2.79 (P = 0.005)

Figure S55. PAP vs. control conditions (change in LVEF, %) [Patients with HF]



Study or Subgroup	PAP Mean	PAP SD	PAP Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
Egea 2008	2.2	7.2	20	-0.5	8.2	25	23.4%	2.70 [-1.80, 7.20]
Hall 2014	5.3	10.4	22	3.8	11	23	12.2%	1.50 [-4.75, 7.75]
Kaneko 2003	8.8	9	12	1.5	9.6	12	8.6%	7.30 [-0.15, 14.75]
Mansfield 2004	5	4.4	19	1.5	6.4	21	41.6%	3.50 [0.12, 6.88]
Smith 2007	1	10	23	1	10	23	14.2%	0.00 [-5.78, 5.78]
Total (95% CI)			**96**			**104**	**100.0%**	**2.90 [0.72, 5.08]**

Heterogeneity: Tau² = 0.00; Chi² = 2.63, df = 4 (P = 0.62); I² = 0%
Test for overall effect: Z = 2.61 (P = 0.009)

Figure S56. PAP vs. control conditions (change in LVEF, %) [Patients without HF]

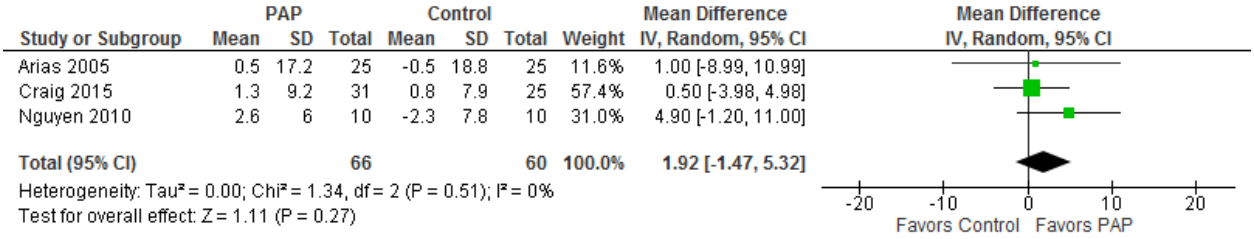


Figure S57. PAP vs. control conditions (Hospitalization risk ratio) [non-RCTs, all patients]

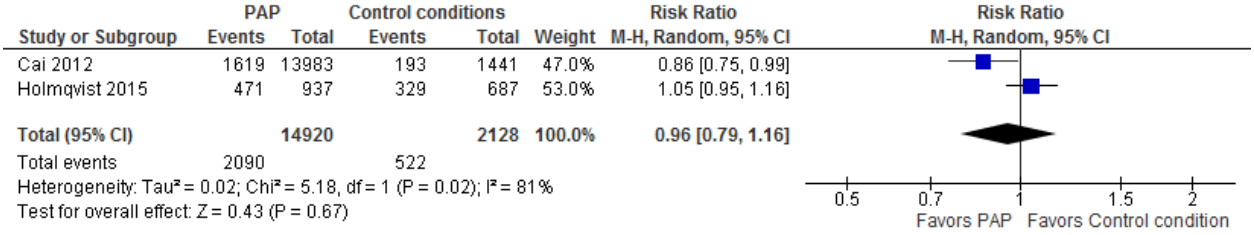


Table S1. Summary of Findings Table for PAP vs. control conditions for the treatment of obstructive sleep apnea in adults: severity, sleepiness, quality of life, neurocognitive outcomes, mood, and motor vehicle crashes

References: Amaro 2012 (A); Ballester 1999 (B); Barbe 2001 (C); Barbe 2010 (D); Barbe 2012 (E); Barnes 2002 (F); Barnes 2004 (G); Becker 2003 (H); Coughlin 2007 (I); Dalmases 2015 (J); Duran-Cantolla 2010 (K); Engleman 1997 (L); Engleman 1998 (M); Engleman 1999 (N); Faccenda 2001 (O); Hack 2000 (P); Hoyos 2012 (Q); Hui 2006 (R); Jenkinson 1999 (S); Kohler 2008 (T); Kushida 2012 (U); Lam 2007 (V); Martinez-Garcia 2013 (W); McArdle 2001 (X); McEvoy 2016 (Y); McMillan 2014 (Z); Montasterio 2001 (AA); Montserrat 2001 (BB); Phillips 2011 (CC); Redline 1998 (DD); Robinson 2006 (EE); Siccoli 2008 (FF); Weaver 2012 (GG); West 2007 (HH); Woodson 2003 (II); Sivam 2012 (JJ); Ip 2006 (KK); Nguyen 2010 (LL); Craig 2012 (MM); Engleman 1994 (NN); George 2001 (OO); Barbe 2007 (PP); Findley 2000 (QQ); Martinez-Garcia 2015 (RR); Komada 2009 (SS); Cassel 1996 (TT); Engleman 1996 (UU); Horstmann 2000 (VV); Krieger 1997 (WW); Yamamoto 2000 (XX); Karimi 2015 (YY); Zhao 2017 (ZZ); Lewis 2017 (AAA); Salord 2016 (BBB)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between PAP and control conditions	№ of participants (studies)
AHI (PAP vs Control)	⊕⊕⊕⊕ HIGH	The mean AHI of the PAP group was 4.1 (5.7). The mean AHI of the control group was 27.5 (13.9). The mean AHI in the PAP group was 23.4 events/hr lower (28.5 lower to 18.3 lower)	832 (11 RCTs) [A,G,H,Q,V,AA,CC,HH,,II,KK]
AHI (Pre- vs. Post-PAP)	⊕⊕⊕⊕ HIGH	The mean AHI of the pretreatment group was 32.7 (12.6). The mean AHI in the posttreatment group was 4.1 (5.6). The mean difference in AHI before and after treatment was 28.6 events/hr lower 36.8 lower to 20.4 lower)	863 (11 RCTs) [A,G,H,Q,V,AA,CC,HH,,II,KK]
Self-reported Sleepiness* (ESS) [all patients]	⊕⊕⊕◯ MODERATE [1]	The mean ESS score in the PAP group was 2.39 lower (2.88 lower to 1.90 lower)	7462 (38 RCTs) [A-JJ,ZZ,BBB]
Self-reported Sleepiness* (ESS) [sleepy patients]	⊕⊕⊕⊕ HIGH	The mean ESS score in the PAP group was 2.71 lower (3.27 lower to 2.15 lower)	6197 (33 RCTs) [A,B, F-CC, FF-JJ,ZZ,BBB]
Self-reported Sleepiness* (ESS) [non-sleepy patients only]	⊕⊕⊕◯ MODERATE [1]	The mean sleepiness (ESS) in the PAP group was 1.05 lower (1.36 lower to 0.74 lower)	1265 (5 RCTs) [C-E, DD, EE]
Objective Sleepiness* (Osler, MWT)	⊕⊕⊕⊕ HIGH	The mean Osler/MWT sleep latency in the PAP group was 0.54 standard deviations lower (0.23 lower to 0.84 lower)	752 (7 RCTs) [G,N,P,S,T,Z,HH]
Objective Sleepiness* (MSLT)	⊕⊕⊕◯ MODERATE [1]	The mean MSLT sleep latency in the PAP group was 0.25 minutes lower (1.38 lower to 0.89 lhigher)	442 (7 RCTs) [D,F,L,M,AA,DD,NN]
Sleep-related QOL* (FOSQ, SAQLI)	⊕⊕⊕◯ MODERATE [1]	The mean FOSQ/SAQLI in the PAP group was 0.27 standard deviations higher (0.09 higher to 0.45 higher)	1621 (13 RCTs) [C,G,O,V,Z,AA-CC,FF-II,MM]

QOL* (SF-12/SF-36 Physical Component Summary)	⊕⊕⊕⊕ HIGH	The mean SF-36 Physical Summary Score in the PAP group was 1.20 higher (0.61 higher to 1.78 higher)	3315 (11 RCTs)[C,F,N,S,V,Y,BB,FF,II,ZZ,AAA]
QOL* (SF-12/SF-36 Mental Component Summary)	⊕⊕⊕◯ MODERATE[1]	The mean SF-36 Mental Summary Score in the PAP group was 1.86 higher (0.06 higher to 3.66 higher)	3638 (12 RCTs) [C,F,M,N,S,V,Y,BB,FF,MM,ZZ,AAA]
QOL* (SF-36 Vitality Score)	⊕⊕⊕⊕ HIGH	The mean SF-36 Vitality Score in the PAP group was 4.63 higher (2.03 higher to 7.23 higher)	674 (8 RCTs)[F,N,V,BB,FF,MM,ZZ,AAA]
Execution Function (Shifting)	⊕⊕⊕◯ MODERATE[1]	The mean Shifting Score in the PAP group was 0.04 standard deviations lower (0.21 fewer to 0.12 greater)	729 (7 RCTs)[C,G,J,M,N,Z,AA]
Executive Function (Updating)	⊕⊕⊕◯ MODERATE[1]	The mean Updating Score in the PAP group was 0.07 standard deviations higher (0.13 lower to 0.28 higher)	1284 (7 RCTs)[C,G,J,M,N,U,AA]
Executive Function (Fluid Reasoning)	⊕⊕⊕◯ MODERATE[1]	The mean Fluid Reasoning Score in the PAP group was 0.03 standard deviations greater (0.20 fewer to 0.26 greater)	293 (4 RCTs)[C,M,N,AA]
Processing Speed	⊕⊕⊕⊕ HIGH	The mean processing speed in the PAP group was 0.07 standard deviations greater (0.03 lower to 0.17 greater)	1556 (8 RCTs)[C,G,J,M,U,Z,AA]
Attention/Vigilance	⊕⊕⊕⊕ HIGH	The mean attention/vigilance in the PAP group was 0.01 standard deviations higher (0.20 fewer to 0.22 greater)	342 (5 RCTs)[C,M,N,,AA,II]
Memory	⊕⊕⊕⊕ HIGH	The mean memory in the PAP group was 0.01 standard deviations higher (0.13 higher to 0.11 lower)	1069 (4 RCTs)[C,M,U,AA]
Intelligence	⊕⊕◯◯ LOW[1]	The mean intelligence in the PAP group was 0.07 standard deviations greater (0.3 fewer to 0.44 greater)	114 (2 RCTs)[M,N]
Depression (HADS)	⊕⊕⊕⊕ HIGH	The mean HADS Depression Score in the PAP group was 0.78 lower (1.05 lower to 0.52 lower)	2978 (5 RCTs)[M,N,Y,Z,RR]
Anxiety (HADS)	⊕⊕⊕⊕ HIGH	The mean HADS Anxiety Score in the PAP group was 0.45 lower (0.71 lower to 0.19 lower)	2979 (5 RCTs)[M,N,Y,Z,RR]
Driving Proficiency (SteerClear, Obstacles hit)	⊕⊕⊕◯ MODERATE[1]	The mean SteerClear Obstacles Hit score in the PAP group was 0.08 standard deviations higher (0.45 higher to 0.28 lower)	114 (2 RCTs)[M,N]
Driving Proficiency (SteerClear, % Obstacles hit)	⊕⊕⊕◯ MODERATE[1]	The mean SteerClear % Obstacles Hit score in the PAP group was 0.00 standard deviations different (0.29 greater to 0.29 lower)	179 (2 RCTs)[C,AA]
Motor vehicle crash rate risk ratio (PAP pre-treatment vs. post-treatment)	⊕⊕◯◯ LOW	The mean crash rate risk ratio in the PAP group was 0.28 (0.18 to 0.43)	3480 (10 observational studies)[OO-QQ,SS-YY]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)

Table S2. Summary of Findings Table for PAP vs. control conditions for the treatment of obstructive sleep apnea in adults: blood pressure and glycemia

References: Arias 2005 (A); Barbe 2001 (B); Barnes 2002 (C); Becker 2003 (D); Drager 2007 (E); Drager 2011 (F); Duran-Cantolla 2010 (G); Hui 2006 (H); Lozano 2010 (I); Martinez-Garcia 2013 (J); Muxfeldt 2015 (K); Pedrosa (L); Barnes 2004 (M); Barbe 2010 (N); Campos-Rodriguez 2006 (O); Craig 2012 (P); Cross 2008 (Q); Egea 2008 (R); McEvoy 2016 (S); Montasterio 2001 (T); Pepperell 2002 (U); Robinson 2006 (V); Ryan 2005 (W); Coughlin 2007 (X); Hoyos 2012 (Y); Nguyen 2010 (Z); Sivam 2012 (AA); West 2007 (BB); Faccenda 2001 (CC); Martinez-Ceron 2016 (DD); Shaw 2016 (EE); de Oliveira 2014 (FF); Gottlieb 2014 (GG); Salord 2016 (HH)

Outcomes	**Quality of the evidence (GRADE)**	**Anticipated absolute effects** (95% CI) **MD between PAP and control conditions**	**№ of participants (studies)**
Nighttime systolic BP* (all patients)	⊕⊕⊕◯ MODERATE [1]	The mean nighttime systolic BP in the PAP group was 4.21mm Hg lower (5.96 lower to 2.45 lower)	1272 (14 RCTs)[A-L,FF,GG]

Nighttime diastolic BP* (all patients)	⊕⊕⊕◯ MODERATE [1]	The mean nighttime diastolic BP in the PAP group was 2.31 mm Hg lower (3.72 lower to 0.91 lower)	1451 (15 RCTs)[A-L,M,FF,GG]
Daytime systolic BP* (all patients)	⊕⊕⊕◯ MODERATE [1]	The mean daytime systolic BP in the PAP group was 2.76 mm Hg lower (4.31 lower to 1.20 lower)	1191 (12 RCTs)[A-G,I-K,FF,GG]
Daytime diastolic BP* (all patients)	⊕⊕⊕◯ MODERATE [1]	The mean daytime diastolic BP in the PAP group was 1.98 mm Hg lower (2.88 lower to 0.92 lower)	1191 (12 RCTs) [A-G,I-K,FF,GG]
24-hr systolic BP* (all patients)	⊕⊕⊕◯ MODERATE [1]	The mean 24-hr systolic BP in the PAP group was 1.47 mm Hg lower (2.28 lower to 0.66 lower)	4905 (23 RCTs)[B-D,F-K,M-O,T-W,CC,FF,GG]
24-hr diastolic BP* (all patients)	⊕⊕⊕◯ MODERATE [1]	The mean 24-hr diastolic BP in the PAP group was 1.58 mm Hg lower (2.23 lower to 0.93 lower)	4595 (22 RCTs)[B-D,F,G-K,M-O,Q-X,CC,FF,GG]
24-hr mean BP* (all patients)	⊕⊕⊕⊕ HIGH	The mean 24-hr mean BP is the PAP group was 2.63 mm Hg lower (3.86 lower to 1.39 lower)	994 (8 RCTs)[D,G,H,J,O,U,V, ,FF]
Nighttime systolic BP* (resistant hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean nighttime systolic BP in the PAP group was 3.26 mm Hg lower (6.11 lower to 0.41 lower)	446 (5 RCTs)[I-L,FF]
Nighttime diastolic BP* (resistant hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean nighttime diastolic BP in the PAP group was 2.20 mm Hg lower (4.39 lower to 0.01 lower)	444 (5 RCTs)[I-L,FF]
Daytime systolic BP* (resistant hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean daytime systolic BP in the PAP group was 1.54 mm Hg lower (4.47 lower to 1.39 higher)	409 (4 RCTs)[I-K,FF]
Daytime diastolic BP* (resistant hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean daytime diastolic BP in the PAP group was 1.13 mm Hg lower (3.37 lower to 1.12 higher)	409 (4 RCTs)[I-K,FF]
24-hr systolic BP* (resistant hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean 24-hr systolic BP in the PAP group was 2.15 mm Hg lower (5.05 lower to 0.75 higher)	409 (4 RCTs)[I-K,FF]
24-hr diastolic BP* (resistant hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean 24-hr diastolic BP in the PAP group was 2.06 mm Hg lower (4.12 lower to 0.00 lower)	409 (4 RCTs)[I-K,FF]
24-hr mean BP* (resistant hypertensive patients)	⊕⊕◯◯ LOW [1]	The mean 24-hr mean BP is the PAP group was 3.30 mm Hg lower (7.10 lower to 0.50 higher)	194 (1 RCT)[J]
Nighttime systolic BP* (hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean nighttime systolic BP in the PAP group was 3.94 mm Hg lower (6.46 lower to 1.43 lower)	530 (2 RCTs)[G,GG]
Nighttime diastolic BP* (hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean nighttime diastolic BP in the PAP group was 3.03 mm Hg lower (5.28 lower to 0.79 lower)	530 (2 RCTs)[G,GG]
Daytime systolic BP* (hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean daytime systolic BP in the PAP group was 2.70 mm Hg lower (4.92 lower to 0.47 lower)	530 (2 RCTs)[G,GG]
Daytime diastolic BP* (hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean daytime diastolic BP in the PAP group was 2.40 mm Hg lower (3.88 lower to 0.92 lower)	530 (2 RCTs)[G,GG]
24-hr systolic BP* (hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean 24-hr diastolic BP in the PAP group was 2.53 mm Hg lower (4.30 lower to 0.76 lower)	986 (5 RCTs)[G,N,O,V,GG]
24-hr diastolic BP* (hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean 24-hr diastolic BP in the PAP group was 2.23 mm Hg lower (3.42 lower to 1.03 lower)	986 (5 RCTs)[G,N,O,V,GG]
24-hr mean BP* (hypertensive patients)	⊕⊕⊕◯ MODERATE [1]	The mean 24-hr mean BP is the PAP group was 2.16 mm Hg lower (3.59 lower to 0.72 lower)	627 (4 RCTs)[G,O,W,GG]
Nighttime systolic BP* (normotensive patients)	⊕⊕◯◯ LOW [1]	The mean nighttime systolic BP in the PAP group was 1.91 mm Hg lower (7.16 lower to 3.34 higher)	74 (2 RCTs)[A,E]

Nighttime diastolic BP* (normotensive patients)	⊕⊕◯◯ LOW [1]	The mean nighttime diastolic BP in the PAP group was 1.00 lower (4.38 lower to 2.38 higher)	74 (2 RCTs)[A,E]
Daytime systolic BP* (normotensive patients)	⊕⊕◯◯ LOW [1]	The mean daytime systolic BP in the PAP group was 0.39 mm Hg lower (4.75 lower to 3.97 higher)	74 (2 RCTs)[A,E]
Daytime diastolic BP* (normotensive patients)	⊕⊕◯◯ LOW [1]	The mean daytime diastolic BP in the PAP group was 0.24 mm Hg lower (2.91 lower to 2.42 higher)	74 (2 RCTs)[A,E]
24-hr systolic BP* (normotensive patients)	⊕⊕◯◯ LOW [1]	The mean 24-hr systolic BP in the PAP group was 1.30 mm Hg lower (3.76 lower to 1.16 higher)	68 (1 RCT)[CC]
24-hr diastolic BP* (normotensive patients)	⊕⊕◯◯ LOW [1]	The mean 24-hr diastolic BP in the PAP group was 1.40 mm Hg lower (3.25 lower to 0.45 higher)	68 (1 RCT)[CC]
Fasting glucose*	⊕⊕⊕⊕ HIGH	The mean fasting glucose in the PAP group was 0.06 mmol/l lower (0.24 lower to 0.12 higher)	655 (8 RCTs)[X-Z,AA,BB,DD,EE,HH]
Hemoglobin A1C	⊕⊕⊕⊕ HIGH	The mean hemoglobin A1C in the PAP group was 0.07% higher (0.06 lower to 0.21 higher)	468 (4 RCT)[AA,BB,DD,HH]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)

Table S3. Summary of Findings Table for PAP vs. control conditions for the treatment of obstructive sleep apnea in adults : cardiovascular events, hospitalization, and mortality

References: Arias 2005 (A); Craig 2015 (B); Egea 2008 (C); Kaneko 2003 (D); Mansfield 2004 (E), Nguyen 2010 (F); Smith 2007 (G); Usui 2005 (H); Barbe 2012 (I); McEvoy 2016 (J); Peker 2016 (K); Abe 2010 (L); Buchner 2007 (M); Campos-Rodriguez 2014 (N); Capodanno 2014 (O); Cassar 2007 (P); Doherty 2005 (Q), Holmqvist 2015 (R); Kanagala 2003 (S); Kasai 2008 (T); Marin 2005 (U), Marti 2002 (V); Milleron 2004 (W); Wang 2007 (X); Cai 2012 (Y); Hall 2014 (Z); Craig 2012 (AA); McMillan 2014 (BB); Parra 2015 (CC)

Outcomes	**Quality of the evidence (GRADE)**	**Anticipated absolute effects** (95% CI) **MD between PAP and control conditions**	**№ of participants (studies)**
LVEF	⊕⊕⊕◯ MODERATE [1]	The mean change in LVEF in the PAP group was 2.61% more (0.78 more to 4.45 more)	326 (8 RCTs)[A-G,AA]
LVEF (patients with HF)	⊕⊕⊕◯ MODERATE [1]	The mean change in LVEF in the PAP group was 2.90% more (0.72 more to 5.08 more)	200 (5 RCTs)[C-E,G,AA]
LVEF (patients without HF)	⊕⊕⊕◯ MODERATE [1]	The mean change in LVEF in the PAP group was 1.92% more (1.47 fewer to 5.32 more)	126 (3 RCTs)[A,B,F]
		Relative Effect Baseline Risk Comparative risk	
Cardiovascular events * (RCTs)	⊕⊕⊕◯ MODERATE [1]	210 per 1000 **201 per 1000** (177 to 229) **RR 0.96** (0.84 to 1.11)	4356 (6 RCTs)[I,J,L,AA-CC]
Cardiovascular events * (non-RCTs)	⊕⊕◯◯ LOW	208 per 1000 **96 per 1000** (65 to 128) **RR 0.46** (0.32 to 0.66)	5357 (11 observational studies)[L-S,U-W]
All-cause mortality* (RCTs)	⊕⊕⊕◯ MODERATE [1]	34 per 1000 **32 per 1000** (23 to 46) **RR 0.96** (0.68 to 1.36)	3780 (4 RCTs)[I-K,CC]

All-cause mortality* (non-RCTs)	⊕⊕◯◯ LOW	91 per 1000	**36 per 1000** (22 to 63) **RR 0.40** (0.24 to 0.69)	4474 (9 observational studies)[N-R,T-V,X]
All-cause mortality* (non-RCTs, patients with HF)	⊕◯◯◯ VERY LOW [1]	317 per 1000	**76 per 1000** (35 to 168) **RR 0.24** (0.11 to 0.53)	139 (2 observational studies)[T,X]
All-cause mortality* (non-RCTs, patients without HF)	⊕⊕◯◯ LOW	90 per 1000	**34 per 1000** (19 to 64) **RR 0.38** (0.21 to 0.72)	2340 (5 observational studies)[N,O,Q,U,V]
Hospitalizations (non-RCTs)	⊕◯◯◯ VERY LOW [1]	245 per 1000	**235 per 1000** (194 to 285) **RR 0.96** (0.79 to 1.16)	17048 (2 observational studies)[R,Y]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)

APAP-initiated PAP vs. in-lab-initiated PAP for the treatment of obstructive sleep apnea in adults

Figure S58. APAP-intiated PAP vs. In-lab-intiated PAP (AHI, events/hr)

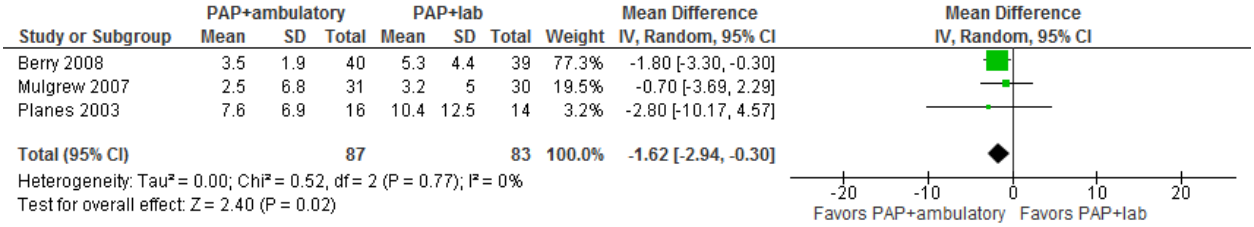


Figure S59. APAP-intiated PAP vs. In-lab-intiated PAP (Adherence, hrs/night)

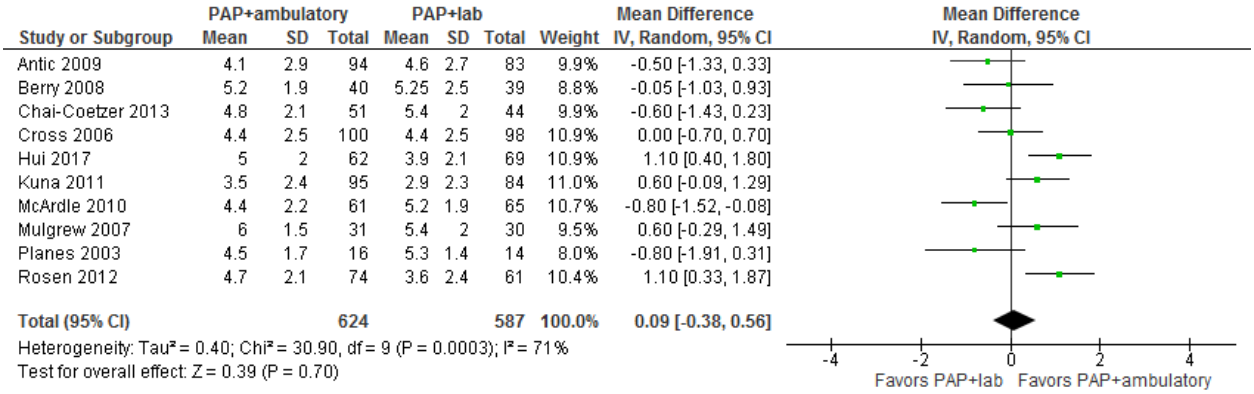


Figure S60. APAP-intiated PAP vs. In-lab-intiated PAP (ESS)

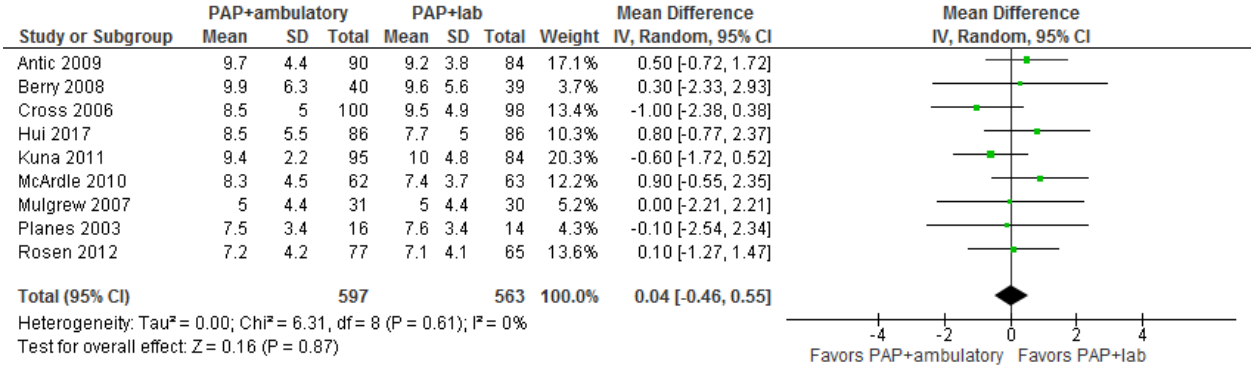


Figure S61. APAP-intiated PAP vs. In-lab-intiated PAP (FOSQ & SAQLI)

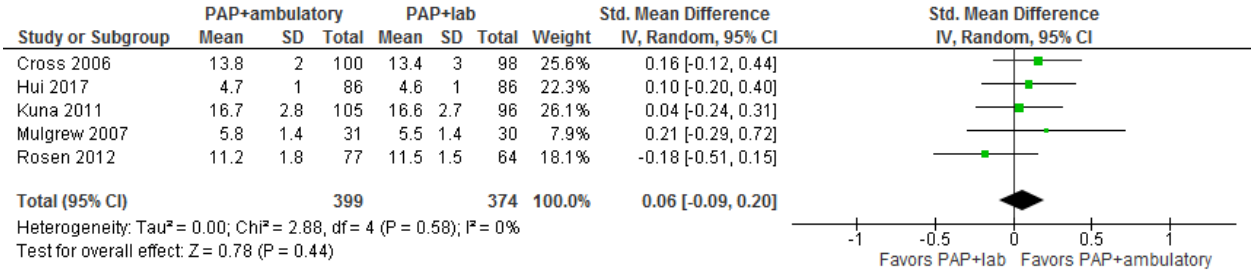


Table S4. Summary of Findings Table for APAP-intiated PAP vs. In-lab-intiated PAP for the treatment of obstructive sleep apnea in adults

References: Antic 2009 (A); Berry 2008 (B); Cross 2006 (C); Kuna 2011 (D); McArdle 2010 (E); Mulgrew 2007 (F); Planes 2003 (G); Rosen 2012 (H); Chai-Coetzer 2013 (I); Hui 2017 (J)

Outcomes	**Quality of the evidence (GRADE)**	**Anticipated absolute effects** (95% CI) **MD between APAP initiated PAP and in-lab initiated PAP**	**№ of participants (studies)**
AHI	⊕⊕⊕⊕ HIGH	he mean AHI in the ambulatory PAP group was 3.3 (3.0). The mean AHI in the in-lab PAP group was 5.0 (4.8).The mean AHI in the APAP initiated group was 1.62 events/hr lower (2.94 lower to 0.3 lower)	170 (3 RCTs)[B,F,G]
Adherence (hrs/night)*	⊕⊕⊕⊕ HIGH	The mean adherence in the APAP initiated group was 0.09 hrs/night less (0.38 more to 0.56 less)	1211 (10 RCTs)[A-J]
Self-reported Sleepiness (ESS)*	⊕⊕⊕⊕ HIGH	The mean ESS score in the APAP initiated group was 0.04 points higher (0.46 lower to 0.55 higher)	1160 (9 RCTs)[A-H,J]
Sleep-related QOL* (FOSQ, SAQLI)	⊕⊕⊕◯ MODERATE [1]	The mean FOSQ/SAQLI score in the APAP initiated group was 0.06 standard deviations higher (0.09 lower to 0.20 higher)	773 (5 RCTs)[C,D,F,H,J]
QOL* (SF-36 PCS)	⊕⊕◯◯ LOW [1]	The mean (SF-36 PCS in the APAP initiated group was 2.50 higher (1.65 lower to 6.65 higher)	198 (1 RCTs)[C]
QOL* (SF-36 MCS)	⊕⊕◯◯ LOW [1]	The mean SF-36 MCS in the APAP initiated group was 1.00 higher (2.19 lower to 4.19 higher)	198 (1 RCT)[C]
QOL* (SF-36 VS)	⊕⊕⊕⊕ HIGH	The mean SF-36 Vitality score in the APAP initiated group was 1.2 higher (4.44 higher to 2.04 lower)	296 (1RCT)[H]

*Critical Outcomes
[1]95% CI of absolute effect crosses clinical significance threshold and/or small sample size

APAP vs. CPAP for the treatment of obstructive sleep apnea in adults

Figure S62. APAP vs. CPAP (AHI, events/hr)

	APAP			CPAP				Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI	IV, Random, 95% CI
Berry 2014	5.5	4.7	66	4.9	4.9	59	6.0%	0.60 [-1.09, 2.29]	
d'Ortho 2000	10.6	9.3	25	9.7	1.9	25	2.2%	0.90 [-2.82, 4.62]	
Fietze 2007	4.4	3.4	10	3.9	4.3	11	2.7%	0.50 [-2.80, 3.80]	
Galetke 2008	5.6	3.6	20	4.6	2.9	20	5.1%	1.00 [-1.03, 3.03]	
Hussain 2004	13.1	8.3	10	9.6	5.4	10	0.9%	3.50 [-2.64, 9.64]	
Konermann 1998	2.4	1.6	25	3.6	4.4	23	5.4%	-1.20 [-3.10, 0.70]	
Kushida 2011	1.3	2.9	46	1	1.3	47	8.8%	0.30 [-0.62, 1.22]	
Massie 2003	9.6	5.3	44	10.7	6.6	44	4.0%	-1.10 [-3.60, 1.40]	
Meurice 1996	1.7	1.2	8	2.6	3	8	4.5%	-0.90 [-3.14, 1.34]	
Meurice 2007	5.5	6.3	51	2.4	3.4	14	4.0%	3.10 [0.62, 5.58]	
Nolan 2007	2.7	2.1	29	3.5	3.5	29	6.7%	-0.80 [-2.29, 0.69]	
Nussbaumer 2006	4.6	3.8	30	5.4	6.6	30	3.5%	-0.80 [-3.53, 1.93]	
Patruno 2007	6	2.3	15	2	1.6	16	7.0%	4.00 [2.60, 5.40]	
Planes 2003	7.6	6.9	16	10.4	12.5	14	0.7%	-2.80 [-10.17, 4.57]	
Randerath 2001	5	5.2	47	4.3	6.3	47	4.3%	0.70 [-1.64, 3.04]	
Resta 2004	8.3	2	10	8.4	3.6	10	3.9%	-0.10 [-2.65, 2.45]	
Senn 2003	6.8	1.3	58	5.3	1	29	10.1%	1.50 [1.01, 1.99]	
Series 2001	3.3	1.8	11	3.7	4.6	10	3.0%	-0.40 [-3.44, 2.64]	
Teschler 2000	4	1	10	3.7	1	10	8.9%	0.30 [-0.58, 1.18]	
Vennelle 2010	6.7	5.4	181	6.3	5.4	181	8.0%	0.40 [-0.71, 1.51]	
West 2006	5.2	16.1	29	3.8	35	29	0.2%	1.40 [-12.62, 15.42]	
Total (95% CI)			**741**			**666**	**100.0%**	**0.56 [-0.07, 1.19]**	

Heterogeneity: Tau² = 0.95; Chi² = 50.93, df = 20 (P = 0.0002); I² = 61%
Test for overall effect: Z = 1.76 (P = 0.08)

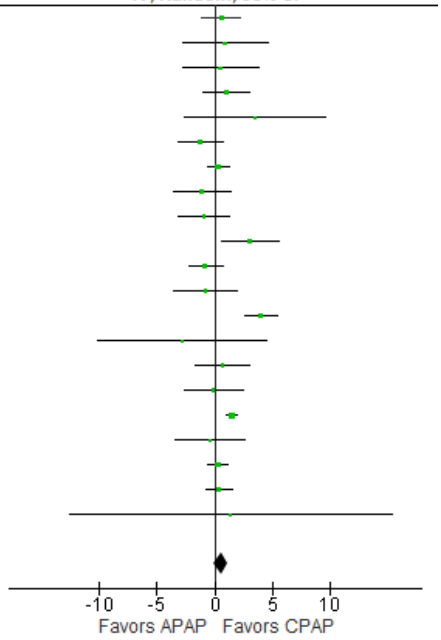


Figure S63. APAP vs. CPAP (Adherence; hrs/night)

Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Berry 2014	4.45	2.3	66	4	2.3	59	5.3%	0.45 [-0.36, 1.26]
d'Ortho 2000	4.1	1.8	25	4.7	1.8	25	3.5%	-0.60 [-1.60, 0.40]
Fietze 2007	5	1.6	10	4.2	2.2	11	1.3%	0.80 [-0.84, 2.44]
Galetke 2008	6.4	1.8	20	6.4	1.9	20	2.6%	0.00 [-1.15, 1.15]
Hudgel 2000	6	1.8	14	5.5	1.8	19	2.2%	0.50 [-0.74, 1.74]
Hukins 2004	5.1	2.4	27	4.7	2.7	19	1.5%	0.40 [-1.11, 1.91]
Hussain 2004	4.3	1.9	10	3.7	2.6	10	0.9%	0.60 [-1.40, 2.60]
Konermann 1998	5.9	1.6	25	5.6	2.5	23	2.4%	0.30 [-0.90, 1.50]
Kushida 2011	4.4	2	54	4.4	2	57	6.3%	0.00 [-0.74, 0.74]
Marrone 2004	4.9	1.7	22	4.4	1.9	22	3.1%	0.50 [-0.57, 1.57]
Massie 2003	5.1	1.9	44	4.5	1.9	44	5.5%	0.60 [-0.19, 1.39]
Meurice 2007	5.9	1.6	51	6.5	1.8	14	3.2%	-0.60 [-1.64, 0.44]
Nolan 2007	4.9	2.1	29	4.9	1.9	29	3.3%	0.00 [-1.03, 1.03]
Noseda 2004	5.3	1.9	24	5.5	1.5	24	3.7%	-0.20 [-1.17, 0.77]
Nussbaumer 2006	5.1	1.6	30	4.8	1.6	30	5.3%	0.30 [-0.51, 1.11]
Patruno 2007	6.2	0.8	15	6	1	16	8.6%	0.20 [-0.44, 0.84]
Planes 2003	4.5	1.7	16	5.3	1.4	14	2.8%	-0.80 [-1.91, 0.31]
Randerath 2001	5.3	1.6	47	5.3	1.6	47	8.3%	0.00 [-0.65, 0.65]
Resta 2004	5.2	1.4	10	5.3	1.8	10	1.7%	-0.10 [-1.51, 1.31]
Senn 2003	5.5	1.5	58	5.6	1.1	29	11.2%	-0.10 [-0.66, 0.46]
Teschler 2000	6.3	1.3	10	6.1	1.6	10	2.1%	0.20 [-1.08, 1.48]
To 2008	4.4	2.3	41	3.8	2	41	4.0%	0.60 [-0.33, 1.53]
Vennelle 2010	4.2	2.7	181	4	2.7	181	11.2%	0.20 [-0.36, 0.76]
Total (95% CI)			**829**			**754**	**100.0%**	**0.11 [-0.07, 0.30]**

Heterogeneity: Tau² = 0.00; Chi² = 13.27, df = 22 (P = 0.93); I² = 0%
Test for overall effect: Z = 1.19 (P = 0.23)

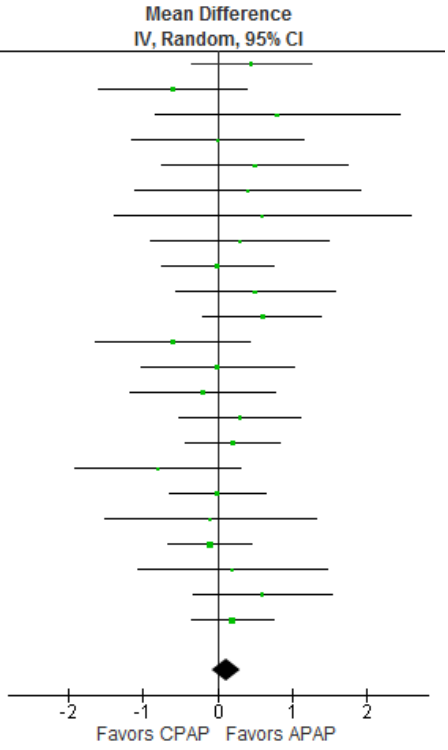


Figure S64. APAP vs. CPAP (Adherence; % nights used)

Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Hukins 2004	83.3	23.3	27	78	32.6	19	4.1%	5.30 [-11.79, 22.39]
Marrone 2004	88.8	15.2	22	83.9	18.6	22	11.8%	4.90 [-5.14, 14.94]
Massie 2003	92	11	44	88	15	44	39.2%	4.00 [-1.50, 9.50]
Nolan 2007	79	29	29	81	25	29	6.1%	-2.00 [-15.94, 11.94]
Noseda 2004	96.5	15	24	95.5	13.8	24	17.8%	1.00 [-7.15, 9.15]
Teschler 2000	98	4.1	10	96	11.4	10	21.0%	2.00 [-5.51, 9.51]
Total (95% CI)			**156**			**148**	**100.0%**	**2.84 [-0.61, 6.28]**

Heterogeneity: Tau² = 0.00; Chi² = 1.12, df = 5 (P = 0.95); I² = 0%
Test for overall effect: Z = 1.62 (P = 0.11)

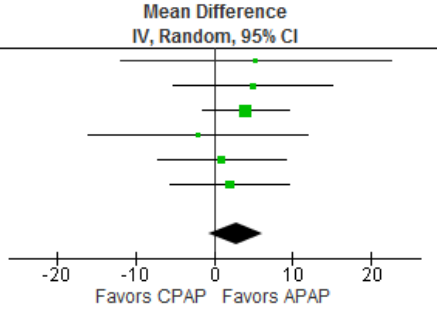


Figure S65. APAP vs. CPAP (Adherence; % nights >4 hrs)

Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Hudgel 2000	73	18.7	14	66	21.8	19	44.7%	7.00 [-6.86, 20.86]
Nussbaumer 2006	72	22	30	68	27	30	55.3%	4.00 [-8.46, 16.46]
Total (95% CI)			**44**			**49**	**100.0%**	**5.34 [-3.93, 14.61]**

Heterogeneity: Tau² = 0.00; Chi² = 0.10, df = 1 (P = 0.75); I² = 0%
Test for overall effect: Z = 1.13 (P = 0.26)

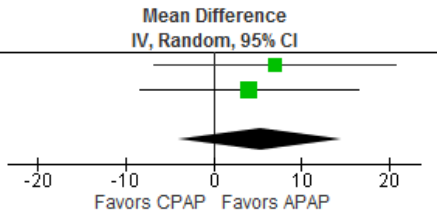
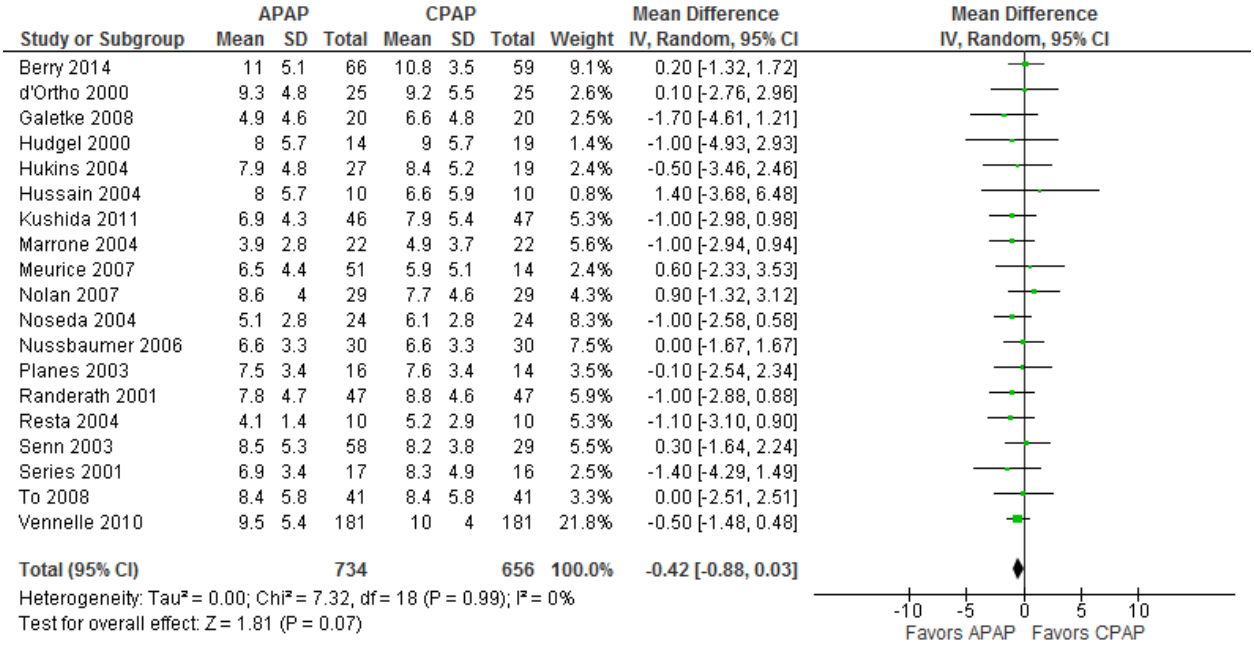


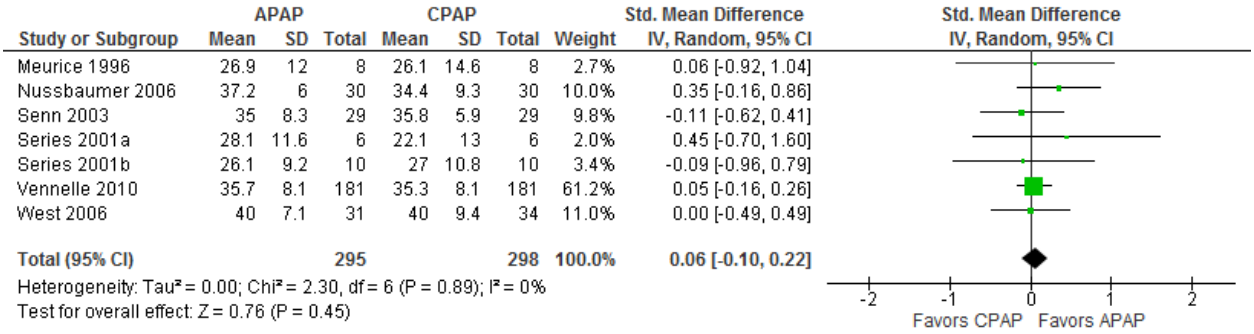
Figure S66. APAP vs. CPAP (ESS)



Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Berry 2014	11	5.1	66	10.8	3.5	59	9.1%	0.20 [-1.32, 1.72]
d'Ortho 2000	9.3	4.8	25	9.2	5.5	25	2.6%	0.10 [-2.76, 2.96]
Galetke 2008	4.9	4.6	20	6.6	4.8	20	2.5%	-1.70 [-4.61, 1.21]
Hudgel 2000	8	5.7	14	9	5.7	19	1.4%	-1.00 [-4.93, 2.93]
Hukins 2004	7.9	4.8	27	8.4	5.2	19	2.4%	-0.50 [-3.46, 2.46]
Hussain 2004	8	5.7	10	6.6	5.9	10	0.8%	1.40 [-3.68, 6.48]
Kushida 2011	6.9	4.3	46	7.9	5.4	47	5.3%	-1.00 [-2.98, 0.98]
Marrone 2004	3.9	2.8	22	4.9	3.7	22	5.6%	-1.00 [-2.94, 0.94]
Meurice 2007	6.5	4.4	51	5.9	5.1	14	2.4%	0.60 [-2.33, 3.53]
Nolan 2007	8.6	4	29	7.7	4.6	29	4.3%	0.90 [-1.32, 3.12]
Noseda 2004	5.1	2.8	24	6.1	2.8	24	8.3%	-1.00 [-2.58, 0.58]
Nussbaumer 2006	6.6	3.3	30	6.6	3.3	30	7.5%	0.00 [-1.67, 1.67]
Planes 2003	7.5	3.4	16	7.6	3.4	14	3.5%	-0.10 [-2.54, 2.34]
Randerath 2001	7.8	4.7	47	8.8	4.6	47	5.9%	-1.00 [-2.88, 0.88]
Resta 2004	4.1	1.4	10	5.2	2.9	10	5.3%	-1.10 [-3.10, 0.90]
Senn 2003	8.5	5.3	58	8.2	3.8	29	5.5%	0.30 [-1.64, 2.24]
Series 2001	6.9	3.4	17	8.3	4.9	16	2.5%	-1.40 [-4.29, 1.49]
To 2008	8.4	5.8	41	8.4	5.8	41	3.3%	0.00 [-2.51, 2.51]
Vennelle 2010	9.5	5.4	181	10	4	181	21.8%	-0.50 [-1.48, 0.48]
Total (95% CI)			**734**			**656**	**100.0%**	**-0.42 [-0.88, 0.03]**

Heterogeneity: Tau² = 0.00; Chi² = 7.32, df = 18 (P = 0.99); I² = 0%
Test for overall effect: Z = 1.81 (P = 0.07)

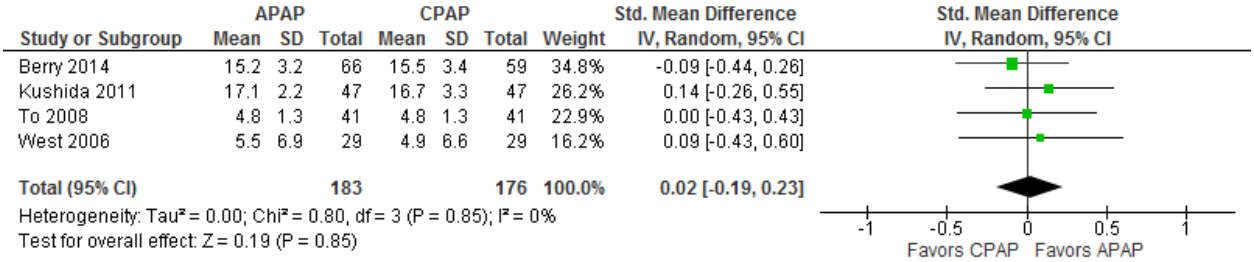
Figure S67. APAP vs. CPAP (Osler & MWT)



Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Std. Mean Difference IV, Random, 95% CI
Meurice 1996	26.9	12	8	26.1	14.6	8	2.7%	0.06 [-0.92, 1.04]
Nussbaumer 2006	37.2	6	30	34.4	9.3	30	10.0%	0.35 [-0.16, 0.86]
Senn 2003	35	8.3	29	35.8	5.9	29	9.8%	-0.11 [-0.62, 0.41]
Series 2001a	28.1	11.6	6	22.1	13	6	2.0%	0.45 [-0.70, 1.60]
Series 2001b	26.1	9.2	10	27	10.8	10	3.4%	-0.09 [-0.96, 0.79]
Vennelle 2010	35.7	8.1	181	35.3	8.1	181	61.2%	0.05 [-0.16, 0.26]
West 2006	40	7.1	31	40	9.4	34	11.0%	0.00 [-0.49, 0.49]
Total (95% CI)			**295**			**298**	**100.0%**	**0.06 [-0.10, 0.22]**

Heterogeneity: Tau² = 0.00; Chi² = 2.30, df = 6 (P = 0.89); I² = 0%
Test for overall effect: Z = 0.76 (P = 0.45)

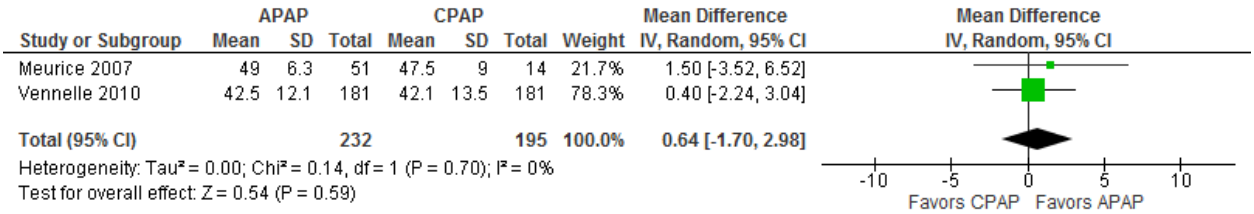
Figure S68. APAP vs. CPAP (FOSQ & SAQLI)



Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Std. Mean Difference IV, Random, 95% CI
Berry 2014	15.2	3.2	66	15.5	3.4	59	34.8%	-0.09 [-0.44, 0.26]
Kushida 2011	17.1	2.2	47	16.7	3.3	47	26.2%	0.14 [-0.26, 0.55]
To 2008	4.8	1.3	41	4.8	1.3	41	22.9%	0.00 [-0.43, 0.43]
West 2006	5.5	6.9	29	4.9	6.6	29	16.2%	0.09 [-0.43, 0.60]
Total (95% CI)			**183**			**176**	**100.0%**	**0.02 [-0.19, 0.23]**

Heterogeneity: Tau² = 0.00; Chi² = 0.80, df = 3 (P = 0.85); I² = 0%
Test for overall effect: Z = 0.19 (P = 0.85)

Figure S69. APAP vs. CPAP (SF-36 PCS)



Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Meurice 2007	49	6.3	51	47.5	9	14	21.7%	1.50 [-3.52, 6.52]
Vennelle 2010	42.5	12.1	181	42.1	13.5	181	78.3%	0.40 [-2.24, 3.04]
Total (95% CI)			**232**			**195**	**100.0%**	**0.64 [-1.70, 2.98]**

Heterogeneity: Tau² = 0.00; Chi² = 0.14, df = 1 (P = 0.70); I² = 0%
Test for overall effect: Z = 0.54 (P = 0.59)

Figure S70. APAP vs. CPAP (SF-36 MCS)

Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Massie 2003	80	14	44	75	18	44	7.6%	5.00 [-1.74, 11.74]
Meurice 2007	46.4	11.2	51	47.3	8.7	14	11.4%	-0.90 [-6.40, 4.60]
Senn 2003	51.5	15.2	58	52	10.8	29	11.2%	-0.50 [-6.05, 5.05]
Vennelle 2010	48.7	10.8	181	48.8	10.8	181	69.7%	-0.10 [-2.33, 2.13]
Total (95% CI)			**334**			**268**	**100.0%**	**0.15 [-1.71, 2.01]**

Heterogeneity: Tau² = 0.00; Chi² = 2.23, df = 3 (P = 0.53); I² = 0%
Test for overall effect: Z = 0.16 (P = 0.87)

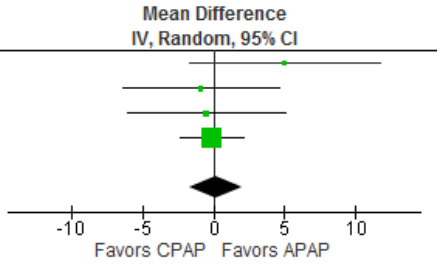


Figure S71. APAP vs. CPAP (SF-36 VS)

Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Massie 2003	65	20	44	58	23	44	34.2%	7.00 [-2.01, 16.01]
Nussbaumer 2006	67	16.4	30	66	16.4	30	39.8%	1.00 [-7.30, 9.30]
Senn 2003	60	26.6	58	63	21.5	29	26.0%	-3.00 [-13.40, 7.40]
Total (95% CI)			**132**			**103**	**100.0%**	**2.01 [-3.43, 7.45]**

Heterogeneity: Tau² = 1.41; Chi² = 2.13, df = 2 (P = 0.35); I² = 6%
Test for overall effect: Z = 0.72 (P = 0.47)

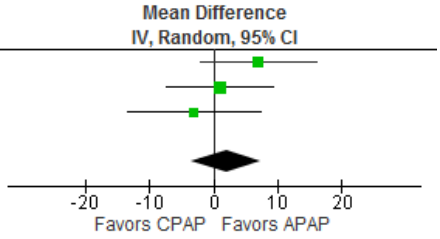


Figure S72. APAP vs. CPAP (PVT reaction time, msec)

Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Kushida 2011	263.1	41.3	46	256.7	30.1	47	90.4%	6.40 [-8.31, 21.11]
Vennelle 2010	292	174.9	181	302.8	255.6	181	9.6%	-10.80 [-55.92, 34.32]
Total (95% CI)			**227**			**228**	**100.0%**	**4.75 [-9.24, 18.74]**

Heterogeneity: Tau² = 0.00; Chi² = 0.50, df = 1 (P = 0.48); I² = 0%
Test for overall effect: Z = 0.67 (P = 0.51)

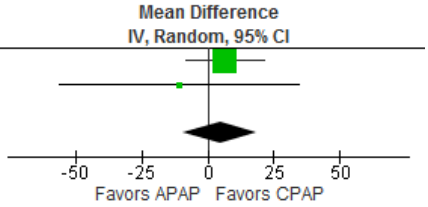


Figure S73. APAP vs. CPAP (PVT lapses)

Study or Subgroup	APAP Mean	APAP SD	APAP Total	CPAP Mean	CPAP SD	CPAP Total	Weight	Mean Difference IV, Random, 95% CI
Kushida 2011	1	2.1	46	1	1.3	47	87.1%	0.00 [-0.71, 0.71]
Vennelle 2010	2.9	6.7	181	3.8	10.8	181	12.9%	-0.90 [-2.75, 0.95]
Total (95% CI)			**227**			**228**	**100.0%**	**-0.12 [-0.78, 0.55]**

Heterogeneity: Tau² = 0.00; Chi² = 0.79, df = 1 (P = 0.37); I² = 0%
Test for overall effect: Z = 0.34 (P = 0.73)

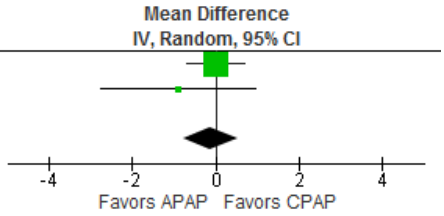


Figure S74. APAP vs. CPAP (Patient Preference)

Study	Patients preferring APAP	Total Patients	% Preferring APAP
d'Ortho 2000	15	25	60
Galetke 2008	13	20	65
Hussain 2004	1	10	10
Marrone 2004	16	22	73
Nolan 2007	14.5	29	50
Noseda 2004	16	24	67
Nussbaumer 2006	26	30	87
To 2008	9	39	23
Vennelle 2010	89	181	49
		Mean =	54

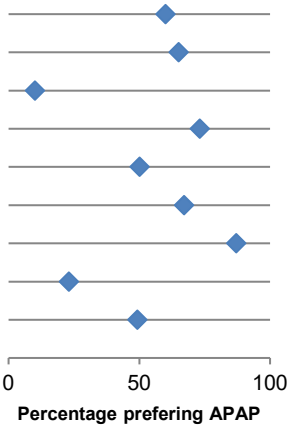


Table S5. Summary of Findings Table for APAP vs. CPAP for the treatment of obstructive sleep apnea in adults

References: Berry 2014 (A); d'Ortho 2000 (B); Fietze 2007 (C); Galetke 2008 (D); Hudgel 2000 (E); Hukins 2004 (F); Hussain 2004 (G); Konermann 1998 (H); Kushida 2011 (I); Marrone 2004 (J); Massie 2003 (K); Meurice 2007 (L); Nolan 2007 (M); Noseda 2004 (N); Nussbaumer 2006 (O); Patruno 2007 (P); Planes 2003 (Q); Randerath 2001 (R); Resta 2004 (S); Senn 2003 (T); Teschler 2000 (U); To 2008 (V); Vennelle 2010 (W); Series 2001 (X); West 2006 (Y); Meurice 1996 (Z)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between APAP and CPAP	№ of participants (studies)
AHI	⊕⊕⊕⊕ HIGH	The mean AHI in the APAP group was 4.9 (3.1). The mean AHI in the CPAP group was 4.5 (3.4). The mean AHI in the APAP group was 0.56 events/hr higher (0.07 lower to 1.19 higher)	1407 (21 RCTs)[A-D,G-I,K-M,O-U,W-Z]
Adherence (hrs/night)*	⊕⊕⊕⊕ HIGH	The mean adherence in the APAP group was 0.11 hrs/night more (0.07 less to 0.30 more)	1583 (23 RCTs)[A-W]
Adherence (% nights used)*	⊕⊕⊕◯ MODERATE [1]	The mean nights PAP used in the APAP group was 2.84% more (6.37 more to 0.09 less)	304 (6 RCTs)[F,J,K,M,N,T]
Adherence (% nights >4hrs)*	⊕⊕⊕◯ MODERATE [1]	The mean nights used >4hrs in the APAP group was 5.34% more (3.93 less to 14.61 more)	93 (2 RCTs)[E,O]
Self-reported sleepiness* (ESS)	⊕⊕⊕⊕ HIGH	The mean ESS score in the APAP group was 0.42 lower (0.88 lower to 0.03 lower)	1390 (19 RCTs)[A,B,D-G,I,J,L-O,Q-T,X,V,W]
Objective sleepiness* (Osler & MWT)	⊕⊕⊕◯ MODERATE[1]	The mean Osler/MWT sleep latency in the APAP group was 0.06 standard deviations lower (0.22 lower to 0.01 higher)	593 (6 RCTs)[O,T,W-Z]
PVT reaction time	⊕⊕⊕◯ MODERATE[1]	The mean PVT reaction time in the APAP group was 4.75 msec slower (9.24 faster to 18.74 slower)	455 (2 RCTs)[I,W]
PVT lapses	⊕⊕⊕◯ MODERATE[1]	The mean PVT lapses in the APAP group was 0.12 lower (0.78 lower to 0.55 higher)	455 (2 RCTs)[I,W]
Sleep-related QOL* (FOSQ & SAQLI)	⊕⊕⊕◯ MODERATE[1]	The mean SAQLI/FOSQ in the APAP group was 0.02 standard deviations higher (0.19 lower to 0.23 higher)	359 (4 RCT)[A,I,V,Y]
QOL* (SF-36 Physical Component Summary)	⊕⊕⊕⊕ HIGH	The mean SF-36 Physical Component Score in the APAP group was 0.64 higher (1.70 lower to 2.98 higher)	427 (2 RCTs)[L,W]
QOL* (SF-36 Mental Component Summary)	⊕⊕⊕⊕ HIGH	The mean SF-36 Mental Component Score in the APAP group was 0.15 higher (1.71 lower to 2.01 higher)	602 (4 RCTs)[K,L,T,W]
QOL* (SF-36 Vitality Score)	⊕⊕⊕⊕ HIGH	The mean SF-36 Vitality Score in the APAP group was 2.01 higher (3.43 lower to 7.45 higher)	235 (3 RCTs)[K,O,T]
Side Effects	⊕⊕◯◯ LOW [1,2]	Meta-analysis not performed due to inconsistent methods of measuring and reporting of side effects across studies	494 (11 RCTs)[B,F,I,K,M,O,Q-T,V]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)
[2]Quality of evidence due to heterogeneity

BPAP vs. CPAP for the treatment of obstructive sleep apnea in adults

Figure S75. BPAP vs. CPAP (AHI, events/hr)

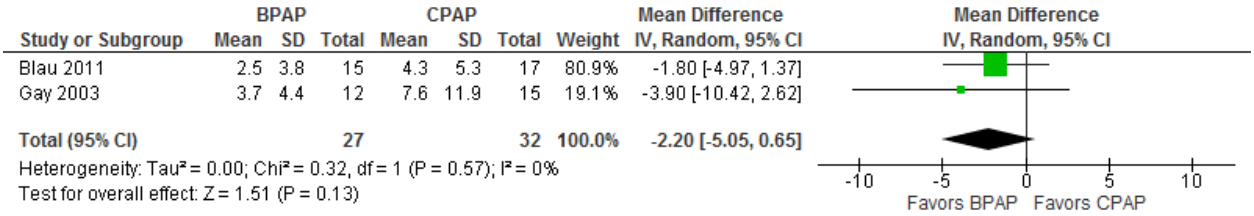
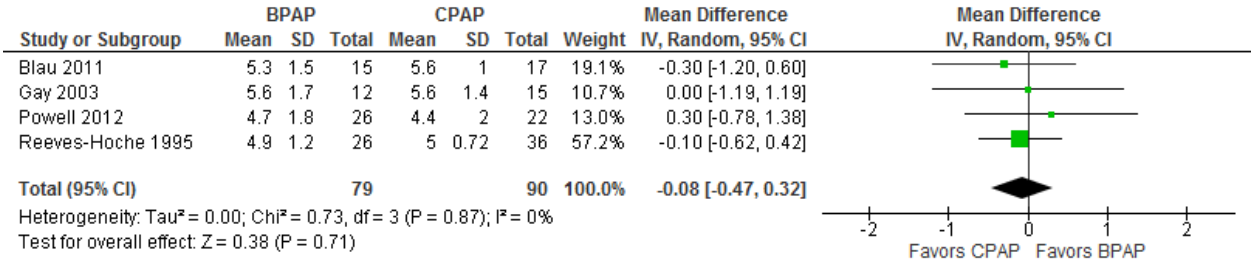
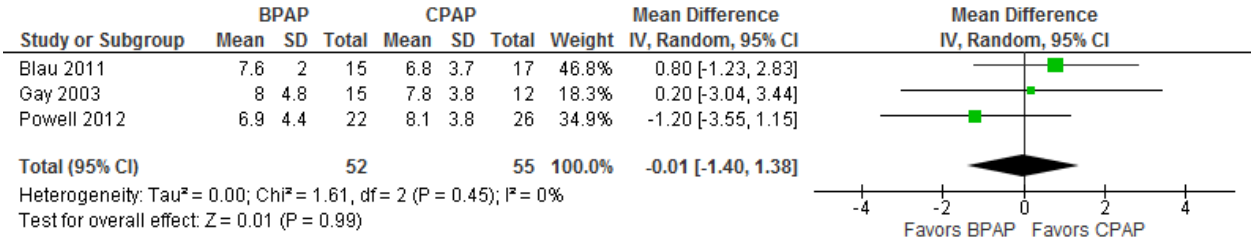


Figure S76. BPAP vs. CPAP (Adherence, hrs/night)*



*Studies included patients who were previously untreated with PAP

Figure S77. BPAP vs. CPAP (ESS)*



*Studies included patients who were previously untreated with PAP

Table S6. Summary of Findings Table for BPAP vs. CPAP for the treatment of obstructive sleep apnea in adults

References: Ballard 2007 (A), Gay 2003 (B); Powell 2012 (C); Reeves-Hoche 1995 (D); Blau 2011 (E)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between BPAP and CPAP	№ of participants (studies)
PAP naive			
AHI	⊕⊕◯◯ LOW [1,2]	The mean AHI in the APAP group was 2.7 (3.9). The mean AHI in the CPAP group was 4.9 (6.6). The mean AHI in the BPAP group was 2.20 events/hr lower (5.05 lower to 0.65 greater)	59 (2 RCTs)[B,E]
Adherence (hrs/night)* PAP naïve	⊕⊕◯◯ LOW [1,2]	The mean adherence in the BPAP group was 0.08 hrs/night lower (0.47 lower to 0.32 higher)	169 (4 RCTs)[B-E]

Sleepiness (ESS)*	⊕⊕◯◯ LOW [1,2]	The mean ESS in the BPAP group was 0.01 less (1.40 less to 1.38 more)	107 (3 RCTs)[B,C,E]
Sleep-related QOL* (FOSQ) PAP naïve	⊕◯◯◯ VERY LOW [1,2]	The mean QOL (FOSQ) in the BPAP group was 0.02 standard deviations lower (0.44 lower to 0.39 higher)	89 (1 RCT)[B]
Sleep Quality (PSQI)	⊕◯◯◯ VERY LOW [1,2]	The mean PSQI in the BPAP group was 0.07 standard deviations higher (0.62 lower to 0.77 higher)	32 (1 RCT)[E]
Side Effects	⊕⊕◯◯ LOW [1,2]	Meta-analysis not performed due to inconsistent methods of measuring and reporting of side effects across studies	97 (2 RCTs)[D,E]
Rescue Therapy			
Adherence (hrs/night)*	⊕⊕◯◯ LOW [1,2]	The mean adherence (hrs/night) in the BPAP group was 0.80 higher (0.03 lower to 1.63 higher)	104 (1 RCT)[A]
Sleep-related QOL* (FOSQ)	⊕◯◯◯ VERY LOW [1,2]	The mean FOSQ in the BPAP group was 0.23 standard deviations higher (0.33 lower to 0.40 higher)	27 (1 RCT)[A]

*Critical Outcomes
[1]Industry funded studies
[2]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)
[3]Study by Ballard 2007 employed BPAP as a rescue therapy

Educational and behavioral interventions plus PAP vs. standard care plus PAP for the treatment of obstructive sleep apnea in adults

Figure S78. Education + PAP vs. Usual Care + PAP (Adherence, hrs/night)

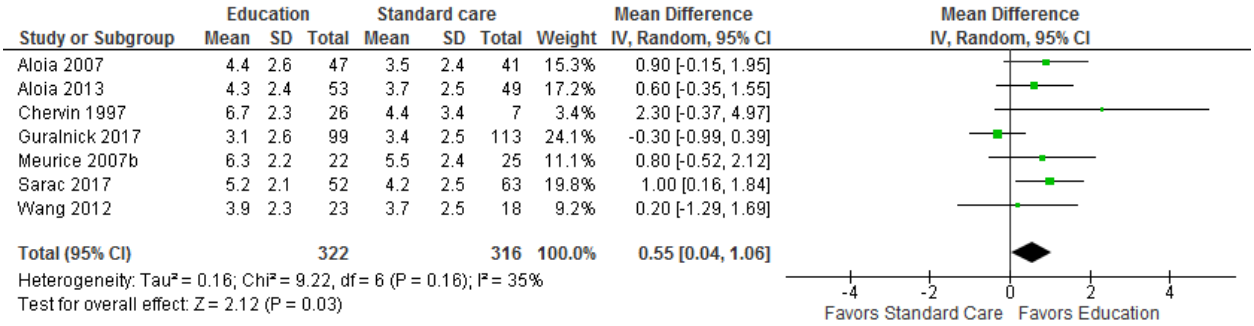


Figure S79. Education + PAP vs. Usual Care + PAP (Adherence, # patients with mean usage > 4hrs/night)

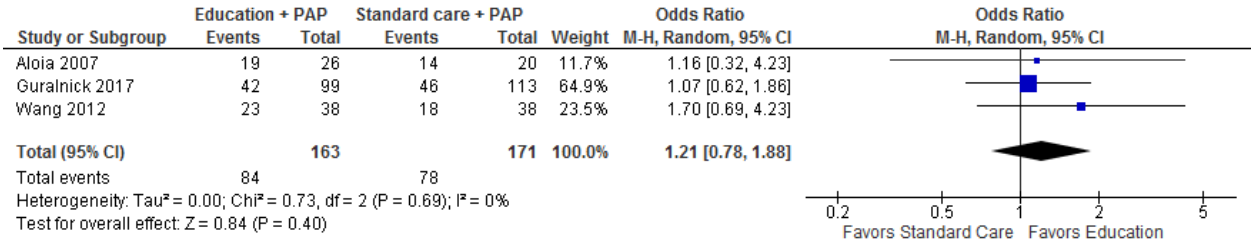


Table S7. Summary of Findings Table for Educational Interventions + PAP vs. Standard Care + PAP

References: Aloia 2007 (A); Aloia 2013 (B); Chervin 1997 (C); Meurice 2007 (D); Wang 2012 (E); Guralnick 2017 (F); Sarac 2017 (G)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between education and standard care	№ of participants (studies)
Adherence* (hrs/night)	⊕⊕⊕◯ MODERATE[1]	The mean adherence (hrs/night) in the educational intervention group was 0.55 hrs/night higher (0.04 higher to 1.06 higher)	638 (7 RCTs)[A-G]
		Relative Effect Baseline Risk / Comparative risk	
Adherence* (# patients with mean usage >4 hrs/night)	⊕⊕⊕◯ MODERATE[2]	632 per 1,000 **675 per 1,000** (572 to 763) **OR 1.21** (0.78 to 1.88)	334 (3 RCTs)[D-F]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold)
[2]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of odds ratio crosses center line of plot and/or small sample size)

Figure S80. Behavioral Interventions + PAP vs. Usual Care + PAP (Adherence, hrs/night)

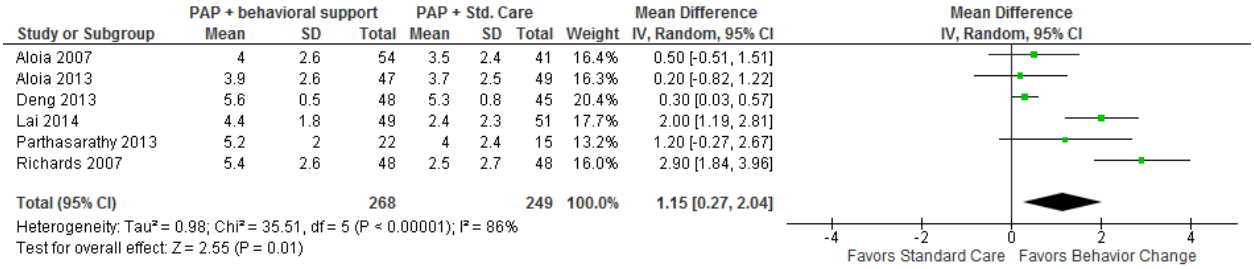


Figure S81. Behavioral Interventions + PAP vs. Usual Care + PAP (Adherence, # patients with mean usage > 4hrs/night)

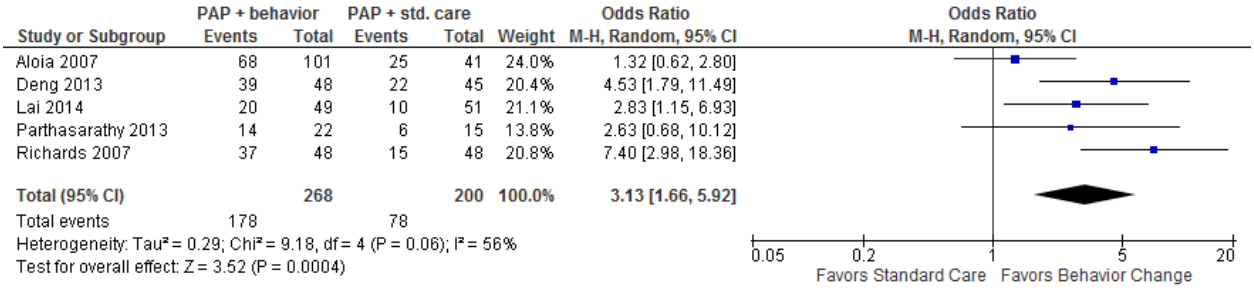


Table S8. Summary of Findings Table for Behavioral Interventions + PAP vs. Usual Care + PAP in the treatment of obstructive sleep apnea in adults

References: Aloia 2007 (A); Aloia 2013 (B); Deng 2013 (C); Lai 2014 (D); Parthasarathy 2013 (E); Richards 2007 (F)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between behavior modification and standard care	№ of participants (studies)
Adherence* (hrs/night)	⊕⊕⊕◯ MODERATE [1]	The mean adherence in the intervention group was 1.15 hrs/night higher (0.27 higher to 2.04 higher)	517 (6 RCTs)[A-F]

		Relative Effect		
		Baseline Risk	Comparative risk	
Adherence* (#patients with mean usage >4 hrs/night)	⊕⊕⊕⊕ HIGH	390 per 1,000	**667 per 1,000** (515 to 791) **OR 3.13** (1.66 to 5.92)	468 (5 RCTs)[A,C-F]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold)

Figure S82. Education + Troubleshooting + PAP vs. Usual Care + PAP (Adherence, hrs/night)

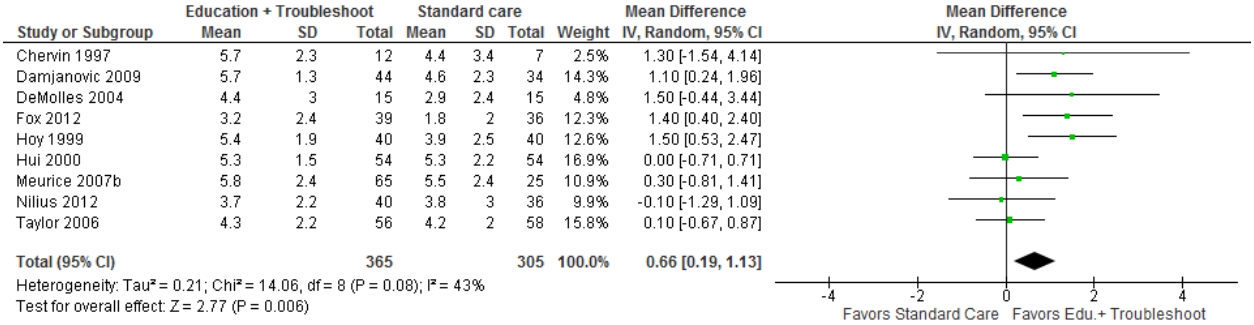


Table S9. Summary of Findings Table for Education + Troubleshooting + PAP vs. Usual Care + PAP in the treatment of obstructive sleep apnea in adults

References: Chervin 1997 (A); Damjanovic 2009 (B); DeMolles 2004 (C); Fox 2012 (D); Hoy 1999 (E); Hui 2000 (F); Meurice 2007 (G); Nilius 2012 (H); Taylor 2006 (I)

Outcomes	**Quality of the evidence (GRADE)**	**Anticipated absolute effects** (95% CI) **MD between education plus troubleshooting and standard care**	**№ of participants (studies)**
Adherence (hrs/night)*	⊕⊕⊕◯ MODERATE [1]	The mean adherence in the intervention group was 0.66 hrs/night higher (0.19 higher to 1.13 higher)	670 (9 RCTs)[A-I]

		Relative Effect		
		Baseline Risk	Comparative risk	
Adherence (# patients with mean usage >4 hrs/night)*	⊕⊕⊕◯ MODERATE [1]	704 per 1,000	**740 per 1,000** (553 to 869) **OR 1.20** (0.52 to 2.80)	108 (1 RCT)[F]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)

Telemonitoring + PAP vs. Usual Care + PAP for the treatment of obstructive sleep apnea in adults

Figure S83. Telemonitoring + PAP vs. Usual Care + PAP (adherence, hrs/day)

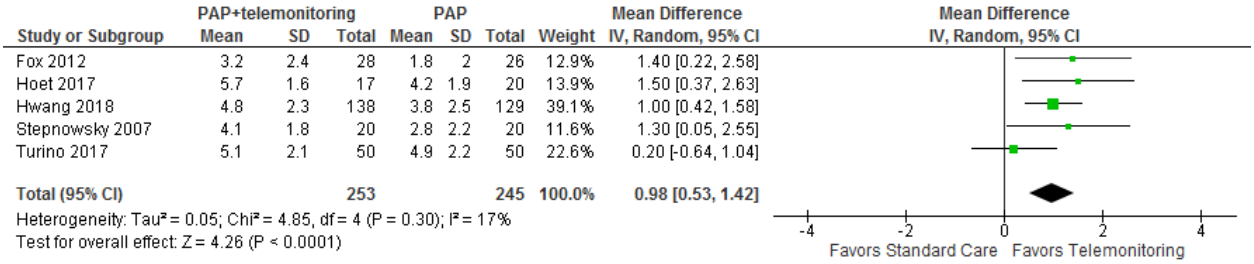


Figure S84. Telemonitoring + PAP vs. Usual Care + PAP (ESS)

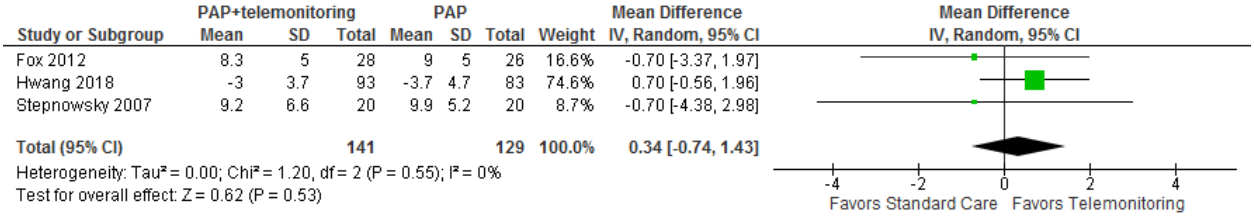


Table S10. Summary of Findings Table for Telemonitoring + PAP vs. Usual Care + PAP in the treatment of obstructive sleep apnea in adults

References: Fox 2012 (A); Stepnowsky 2007 (B); Hoet 2017 (C); Hwang 2018 (D); Turino 2017 (E)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between monitoring and standard care	№ of participants (studies)
Adherence (hrs/night)*	⊕⊕⊕⊕ HIGH	The mean adherence in the intervention group was 0.98 hrs/night higher (0.53 higher to 1.42 higher)	498 (5 RCTs)[A-E]
Self-reported Sleepiness (ESS)*	⊕⊕⊕◯ MODERATE [1]	The mean ESS score in the intervention group was 0.34 lower (0.74 higher to 1.43 lower)	270 (3 RCTs)[A,B,D]
CPAP discomfort (0-10 scale)*	⊕⊕◯◯ LOW [1]	The mean CPAP discomfort score (0-10 scale) in the intervention group was 0.8 lower (2.41 lower to 0.81 higher)	54 (1 RCT)[A]
Difficulty exhaling (0-10 scale)*	⊕⊕◯◯ LOW [1]	The mean difficulty exhaling score (0-10 scale) in the intervention group was 1 lower (2.74 lower to 0.74 higher)	54 (1 RCT)[A]
Mask leaks (0-10 scale)*	⊕⊕◯◯ LOW [1]	The mean mask leaks score (0-10 scale) in the intervention group was 0.9 lower (2.45 lower to 0.65 higher)	54 (1 RCT)[A]
Dry mouth (0-10 scale)*	⊕⊕◯◯ LOW [1]	The mean dry mouth score (0-10 scale) in the intervention group was 1.6 lower (2.91 lower to 0.29 lower)	54 (1 RCT)[A]
Nasal congestion (0-10 scale)*	⊕⊕◯◯ LOW [1]	The mean nasal congestion score (0-10 scale) in the intervention group was 0.9 lower (2.27 lower to 0.47 higher)	54 (1 RCT)[A]

Sleep-related QOL (FOSQ)*	⊕⊕◯◯ LOW [1]	The mean FOSQ score in the intervention group was 0.80 lower (3.66 lower to 2.06 higher)	40 (1 RCT)[B]
QOL (EuroQOL)*	⊕⊕◯◯ LOW [1]	The mean EuroQOL sore in the intervention group was 0.00 lower (0.07 lower to 0.07 lower)	100 (1 RCT)[E]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)

Modified pressure profile PAP vs. standard PAP for the treatment of obstructive sleep apnea in adults

Figure S85. Modified pressure profile PAP vs. Standard PAP (Adherence, hrs/night)

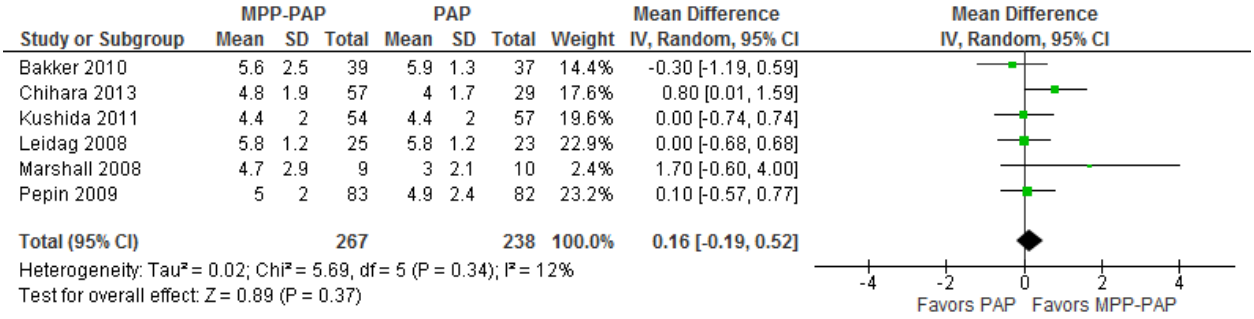


Figure S86. Modified pressure profile PAP vs. Standard PAP (ESS)

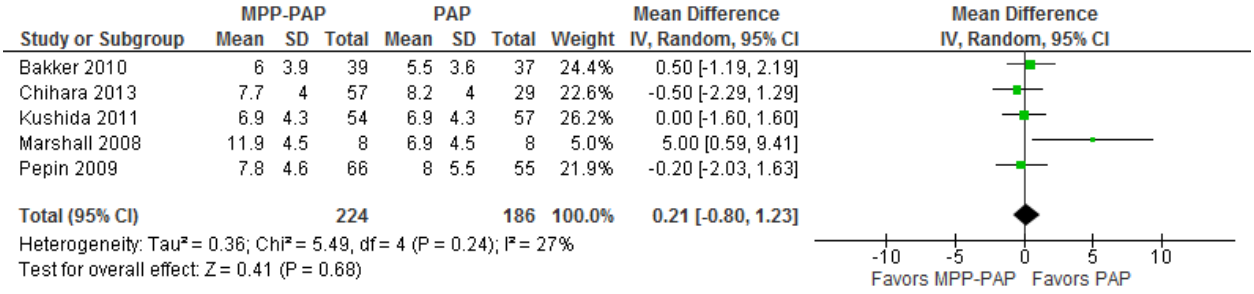


Figure S87. Modified pressure profile PAP vs. Standard PAP (FOSQ & SAQLI)

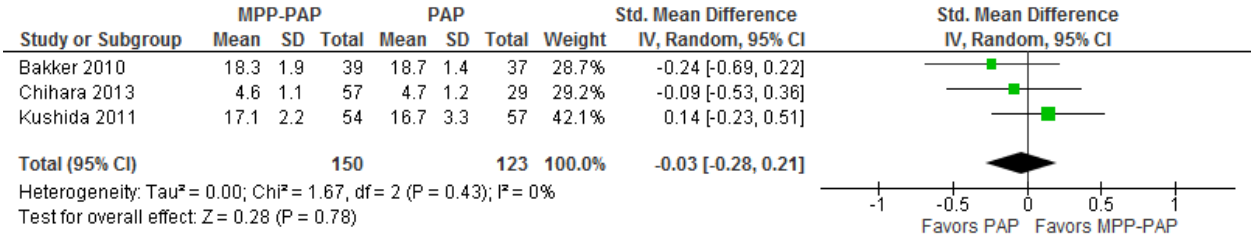


Figure S88. Modified pressure profile PAP vs. Standard PAP (PSQI)

Study or Subgroup	MPP-PAP Mean	SD	Total	PAP Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Bakker 2010	4.8	3	39	5.8	3	37	46.3%	-1.00 [-2.35, 0.35]
Chihara 2013	6	2.6	57	6.1	2.9	29	53.7%	-0.10 [-1.35, 1.15]
Total (95% CI)			96			66	100.0%	**-0.52 [-1.43, 0.40]**

Heterogeneity: Tau² = 0.00; Chi² = 0.92, df = 1 (P = 0.34); I² = 0%
Test for overall effect: Z = 1.10 (P = 0.27)

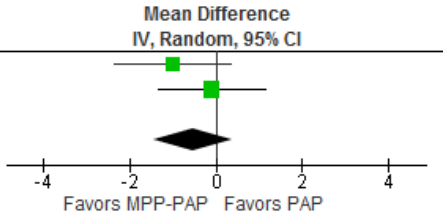


Figure S89. Modified pressure profile PAP vs. Standard PAP (change in PVT Reaction Time)

Study or Subgroup	MPP-PAP Mean	SD	Total	PAP Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Bakker 2010	-32.4	70.8	39	-64.4	113.9	37	40.4%	0.34 [-0.12, 0.79]
Kushida 2011	-13.7	45.5	46	-30.9	59.2	47	49.5%	0.32 [-0.09, 0.73]
Marshall 2008	-75	540	9	-179	357.8	10	10.1%	0.22 [-0.68, 1.12]
Total (95% CI)			94			94	100.0%	**0.32 [0.03, 0.61]**

Heterogeneity: Tau² = 0.00; Chi² = 0.05, df = 2 (P = 0.97); I² = 0%
Test for overall effect: Z = 2.16 (P = 0.03)

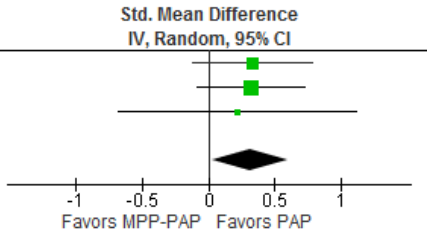


Figure S90. Modified pressure profile PAP vs. Standard PAP (change in PVT Lapses)

Study or Subgroup	MPP-PAP Mean	SD	Total	PAP Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Bakker 2010	-3.3	4.1	39	-8.6	10.6	37	36.1%	0.66 [0.20, 1.12]
Kushida 2011	-2.2	2.9	46	-2.4	4.5	47	39.4%	0.05 [-0.35, 0.46]
Marshall 2008	-12.5	13.6	16	-11.2	18.4	16	24.5%	-0.08 [-0.77, 0.61]
Total (95% CI)			101			100	100.0%	**0.24 [-0.21, 0.69]**

Heterogeneity: Tau² = 0.09; Chi² = 4.78, df = 2 (P = 0.09); I² = 58%
Test for overall effect: Z = 1.04 (P = 0.30)

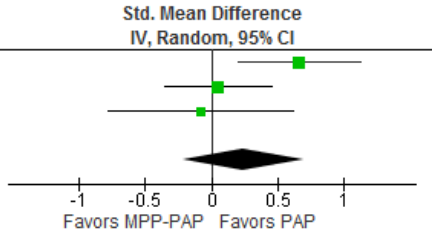


Table S11. Summary of Findings Table for modified pressure profile PAP vs. standard PAP in the treatment of obstructive sleep apnea in adults

References: Bakker 2010 (A); Chihara 2013 (B); Kushida 2011 (C); Marshall 2008 (D); Pepin 2009 (E); Leidag 2008 (F); Nilius 2006 (G)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between modified pressure profile PAP and standard PAP	№ of participants (studies)
Adherence (hrs/night)*	⊕⊕◯◯ LOW [1,2]	The mean adherence in the modified pressure profile group was 0.16 hrs/night greater (0.52 greater to 0.19 fewer)	505 (6 RCTs)[A-F]
Self-reported Sleepiness (ESS)*	⊕⊕◯◯ LOW [1,2]	The mean ESS score in the modified pressure profile group was 0.21 higher (1.23 higher to 0.80 lower)	413 (5 RCTs)[A-E]
Attention/Vigilance (PVT Reaction Time)	⊕⊕◯◯ LOW [1,2]	The mean PVT Reaction Time in the modified pressure profile group was 0.32 standard deviations lower (0.03 lower to 0.61 lower)	188 (3 RCTs)[A,C,D]
Attention/Vigilance (PVT Lapses)	⊕⊕◯◯ LOW [1,2]	The mean PVT Lapses in the modified pressure profile group based on PVT_{Lapses} was 0.24 standard deviations lower (0.53 lower to 0.04 higher)	188 (3 RCTs)[A,C,D]
Sleep-related QOL* (FOSQ & SAQLI)	⊕⊕◯◯ LOW [1,2]	The mean FOSQ/SAQLI) in the modified pressure profile group was 0.03 standard deviations less (0.28 less to 0.21 greater)	273 (3 RCTs)[A-C]

QOL* (SF-36 PCS)	⊕◯◯◯ VERY LOW [1,2]	The mean SF-36 Physical Component Score in the modified pressure profile group was 1.3 more (9.93 fewer to 12.53 more)	76 (1 RCT)[A]
QOL* (SF-36 MCS)	⊕◯◯◯ VERY LOW [1,2]	The mean SF-36 Mental Component Score in the modified pressure profile group was 0.4 less (9.53 greater to 10.33 less)	76 (1 RCT)[A]
QOL* (SF-36 VS)	⊕⊕◯◯ LOW [1,2]	The mean SF-36 Vitality Score in the modified pressure profile group was 2.5 less (6.44 greater to 11.44 less)	76 (1 RCT)[A]
Sleep Quality (PSQI)	⊕⊕◯◯ LOW [1,2]	The mean PSQI score in the modified pressure profile group was 0.52 less (0.40 greater to 1.43 less)	162 (2 RCTs)[A,B]
Side Effects*	⊕⊕◯◯ LOW [1,2]	Meta-analysis not performed due to inconsistent methods of measuring and reporting of side effects across studies	313 (3 RCTs)[C,E,G]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)
[2]Quality of evidence was downgraded due to potential risk of bias from industry funding.

Oral vs. oronasal vs. nasal (nasal mask vs. intranasal mask) CPAP for the treatment of obstructive sleep apnea in adults

Figure S91. Nasal pillows vs. Nasal mask (AHI, events/hr)

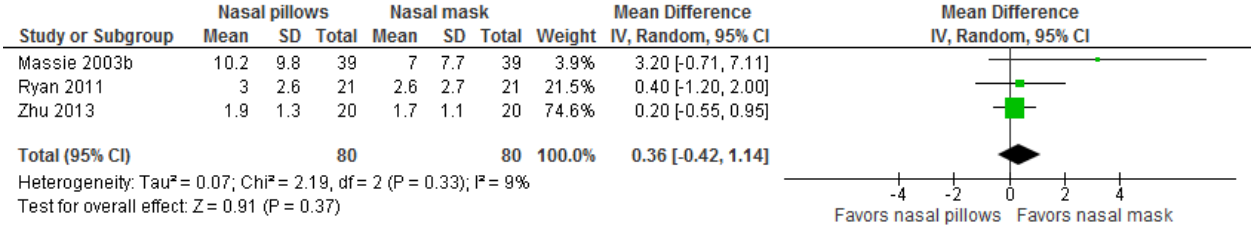


Figure S92. Nasal pillows vs. Nasal mask (Adherence, hrs/night)

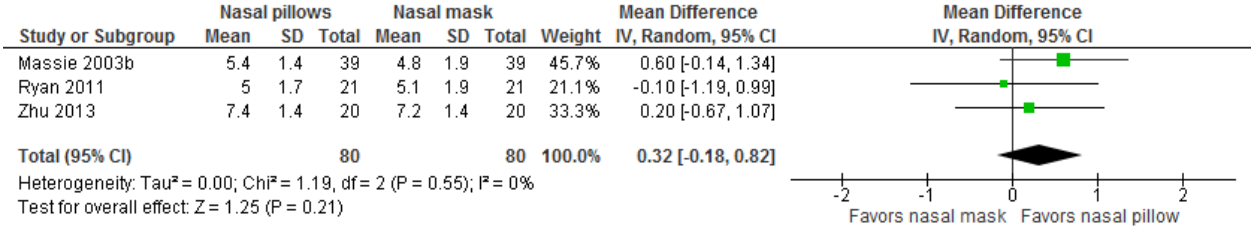


Figure S93. Nasal pillows vs. Nasal mask (Adherence, % nights used)

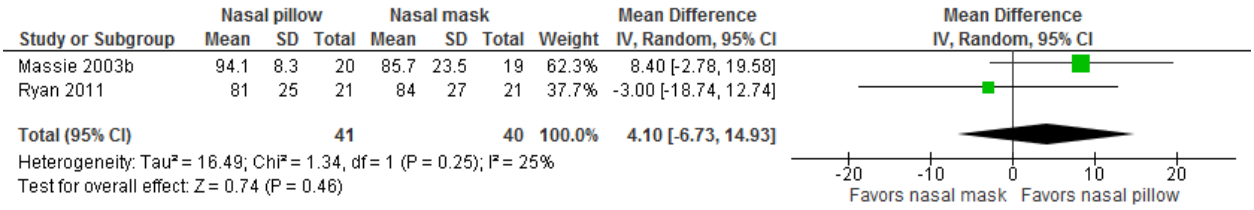


Figure S94. Nasal pillows vs. Nasal mask (ESS)

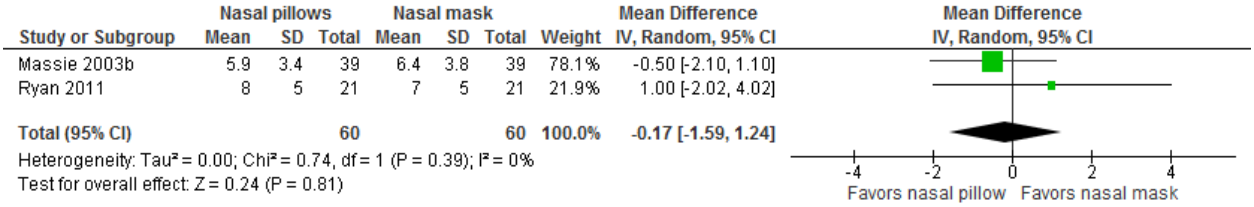


Table S12. Summary of Findings Table for Nasal pillows vs. Nasal mask

References: Massie 2003 (A); Ryan 2011 (B); Zhu 2013 (C)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between nasal pillows and nasal mask	№ of participants (studies)
AHI	⊕⊕◯◯ LOW [1,2]	The mean AHI in the nasal pillow group was 2.5 (1.9). The mean AHI in the nasal group was 2.1 (1.7). The mean AHI in the nasal pillow group was 0.36 events/hr greater (1.14 greater to 0.42 lower)	160 (3 RCTs)[A-C]
Adherence (hrs/night)*	⊕⊕◯◯ LOW [1,2]	The mean adherence in the nasal pillow group was 0.32 hrs/night more (0.18 fewer to 0.82 more)	160 (3 RCTs)[A-C]
Adherence (% nights used)*	⊕⊕◯◯ LOW [1,2]	The mean adherence (% nights used) in the nasal pillow group was 4.1% more (6.73 fewer to 14.93 more)	81 (2 RCTs)[A,B]
Self-reported Sleepiness (ESS)*	⊕⊕◯◯ LOW [1,2]	The mean ESS score in the nasal pillow group was 0.17 lower (1.59 lower to 1.24 greater)	120 (2 RCTs)[A,B]
Sleep-related QOL* (FOSQ)	⊕⊕◯◯ LOW [1,2]	The mean FOSQ score in the nasal pillow group was 0.00 different (0.97 lower to 0.97 greater)	39 (1 RCT)[A]
Side Effects	⊕⊕◯◯ LOW [1,2]	Meta-analysis not performed due to inconsistent methods of measuring and reporting of side effects across studies	80 (3 RCTs)[A-C]

*Critical Outcomes
[1]Study funded by industry
[2]95% CI of absolute effect crosses clinical significance threshold and/or small sample size

Figure S95. Oronasal mask vs. Nasal mask (AHI, events/hr) [RCTs]

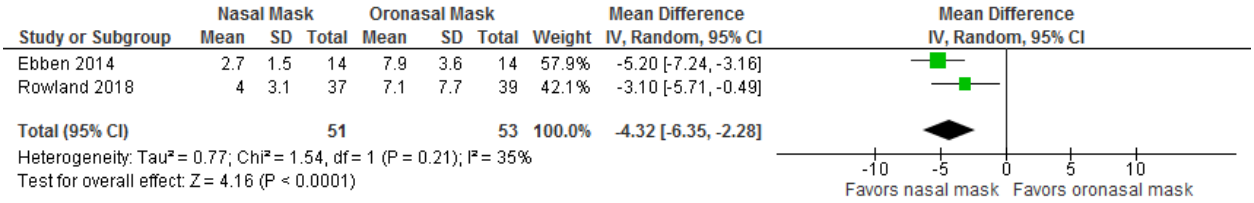


Figure S96. Oronasal mask vs. Nasal mask (Adherence, hrs/night) [RCTs]

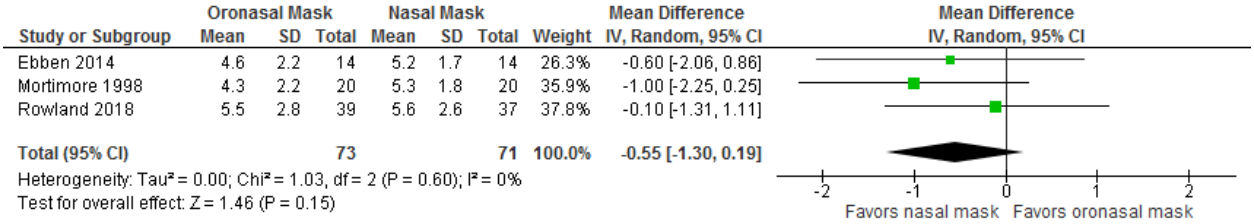


Figure S97. Oronasal mask vs. Nasal mask (Adherence, hrs/night) [non-RCTs]

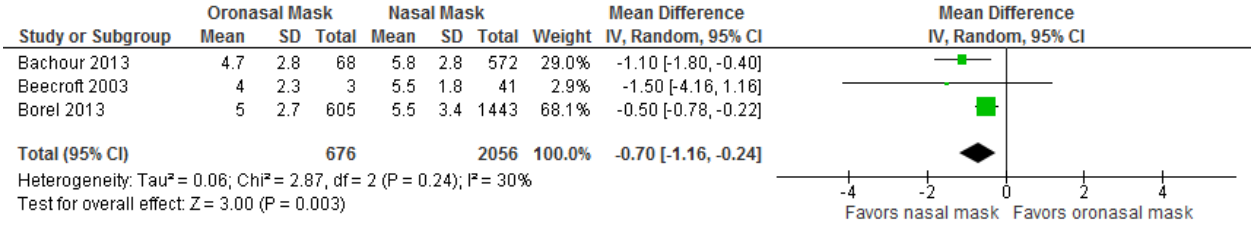


Figure S98. Oronasal mask vs. Nasal mask (ESS) [RCTs]

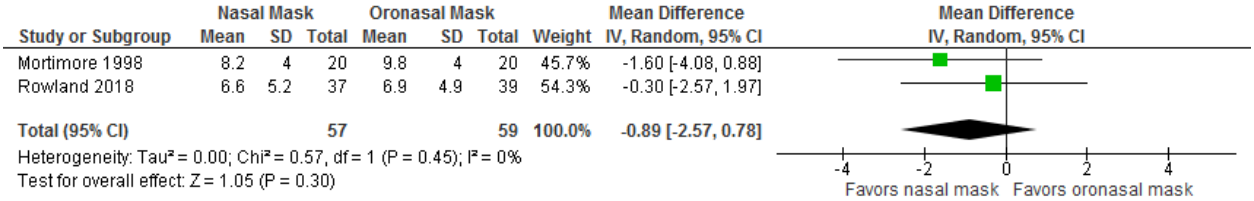


Table S13. Summary of Findings Table for Oronasal mask vs. Nasal mask in the treatment of obstructive sleep apnea in adults

References: Ebben 2014 (A); Mortimore 1998 (B); Bachour 2013 (C); Beecroft 2003 (D); Borel 2013 (E); Rowland 2018 (F)

Outcomes	**Quality of the evidence (GRADE)**	**Anticipated absolute effects** (95% CI) **MD between oronasal mask and nasal mask**	**№ of participants (studies)**
AHI [RCTs]	⊕⊕◯◯ LOW [1,2]	The mean AHI in the oronasal mask group was 4.3 events/hr higher (2.3 higher to 6.4 higher)	90 (2 RCTs)[A,F]
Adherence (hrs/night)* [RCTs]	⊕⊕◯◯ LOW [1]	The mean adherence in the oronasal mask group was 0.55 hrs/night lower (1.30 lower to 0.19 higher)	144 (3 RCT)[A,B,F]
Adherence (% nights > 4hrs) [RCTs]	⊕⊕◯◯ LOW [1,2]	The mean adherence (% nights > 4hrs) in the oronasal mask group was 2.00% lower (16.4 lower to 12.4 higher)	76 (1 RCT)[F]
Adherence (hrs/night) [non-RCTs]	⊕⊕◯◯ LOW [1]	The mean adherence in the oronasal mask group was 0.70 hrs/night lower (0.24 lower to 1.16 lower)	2752 (3 observational studies)[C-E]
Self-reported Sleepiness (ESS)* [RCTs]	⊕⊕◯◯ LOW [1,2]	The mean ESS score in the oronasal mask group was 0.89 lower (2.57 lower to 0.78 higher)	59 (2 RCT)[B,F]
Side Effects	⊕◯◯◯ VERY LOW [1,2]	Meta-analysis not performed due to inconsistent methods of measuring and reporting of side effects across studies	2112 (2 RCT, 2 observational studies)[B,D-F]

*Critical Outcomes

[1]Study funded by industry
[2]95% CI of absolute effect crosses clinical significance threshold and/or small sample size

Table S14. Summary of Findings Table for Oral mask vs. Nasal mask in the treatment of obstructive sleep apnea in adults

References: Anderson 2003 (A); Khanna 2003 (B); Beecroft 2003 (C); Borel 2013 (D)

Outcomes	Quality of the evidence (GRADE)	Anticipated absolute effects (95% CI) MD between oral mask and nasal mask	№ of participants (studies)
AHI	⊕◯◯◯ VERY LOW [1,2]	The mean AHI in the oral mask group was 5.00 events/hr greater (13.85 fewer to 3.85 greater)	42 (1 RCT)[A]
Adherence (hrs/night)*	⊕◯◯◯ VERY LOW [1,2]	The mean adherence in the oral mask group was 0.90 hrs/night higher (0.73 lower to 2.53 higher)	38 (1 RCT)[B]
Self-reported Sleepiness (ESS)*	⊕⊕◯◯ LOW [1,2]	The mean ESS score in the oral mask group was 1.00 greater (3.84 fewer to 1.84 more)	42 (1 RCT)[A]
Side Effects	⊕◯◯◯ VERY LOW [1,2]	Meta-analysis not performed due to inconsistent methods of measuring and reporting of side effects across studies	2151(2 RCTs, 2 observational studies)[A-D]
		Relative Effect Baseline Risk / Comparative risk	
Adherence (#patients with mean usage >4 hrs/night)*	⊕⊕◯◯ LOW [1,2]	667 per 1,000 **734 per 1000** (342 to 935) **OR 1.38** (0.26 to 7.22)	27 (1 RCT)[B]

*Critical Outcomes
[1]Study funded by industry
[2]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)

Humidified PAP vs. standard PAP for the treatment of obstructive sleep apnea in adults

Figure S99. Humidified PAP vs. Standard PAP (Adherence, hrs/night)

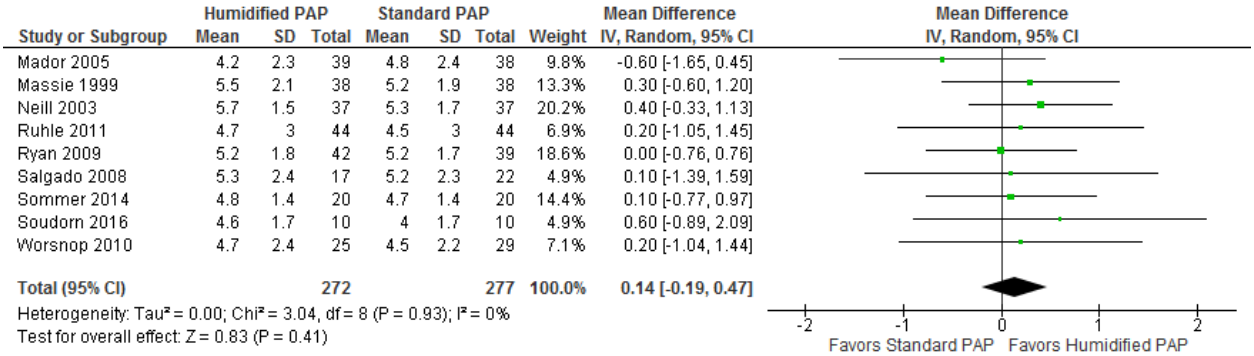


Figure S100. Humidified PAP vs. Standard PAP (ESS)

Study or Subgroup	Humidified PAP Mean	SD	Total	Standard PAP Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Mador 2005	9	4.9	39	8.8	5.8	38	8.8%	0.20 [-2.20, 2.60]
Massie 1999	6.2	3.8	38	7.2	4.8	38	13.4%	-1.00 [-2.95, 0.95]
Neill 2003	4.1	2.1	37	4.5	3.1	37	34.8%	-0.40 [-1.61, 0.81]
Ryan 2009	8	6	42	9	5	39	8.8%	-1.00 [-3.40, 1.40]
Salgado 2008	6.9	5.4	17	6.7	5.3	22	4.4%	0.20 [-3.19, 3.59]
Sommer 2014	5.4	2.6	20	5.6	3.2	20	15.5%	-0.20 [-2.01, 1.61]
Soudorn 2016	9.6	4.1	10	9.6	4.2	10	3.8%	0.00 [-3.64, 3.64]
Worsnop 2010	4.9	3.6	25	5.4	4.6	29	10.6%	-0.50 [-2.69, 1.69]
Total (95% CI)			**228**			**233**	**100.0%**	**-0.42 [-1.13, 0.29]**

Heterogeneity: Tau² = 0.00; Chi² = 1.06, df = 7 (P = 0.99); I² = 0%
Test for overall effect: Z = 1.15 (P = 0.25)

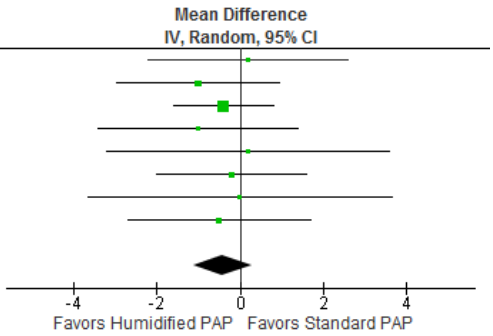


Figure S101. Humidified PAP vs. Standard PAP (QSQ & FOSQ & SAQLI)

Study or Subgroup	Humidified PAP Mean	SD	Total	Standard PAP Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Mador 2005	4.7	1.5	49	4.7	1.5	49	47.6%	0.00 [-0.40, 0.40]
Ruhle 2011	5.7	1.2	44	5.7	1.3	44	42.7%	0.00 [-0.42, 0.42]
Soudorn 2016	17.6	4.1	10	17.6	3.3	10	9.7%	0.00 [-0.88, 0.88]
Total (95% CI)			**103**			**103**	**100.0%**	**0.00 [-0.27, 0.27]**

Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 2 (P = 1.00); I² = 0%
Test for overall effect: Z = 0.00 (P = 1.00)

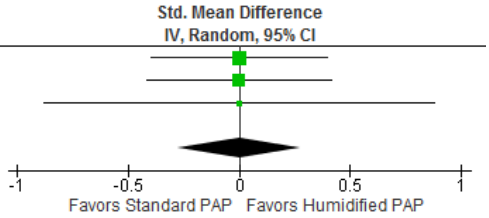


Figure S102. Humidified PAP vs. Standard PAP (Nasal Discharge, incidence)

Study or Subgroup	Humidified PAP Events	Total	Standard PAP Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Neill 2003	8	37	10	37	82.2%	0.74 [0.26, 2.17]
Salgado 2008	1	17	4	22	17.8%	0.28 [0.03, 2.78]
Total (95% CI)		**54**		**59**	**100.0%**	**0.63 [0.24, 1.65]**
Total events	9		14			

Heterogeneity: Tau² = 0.00; Chi² = 0.57, df = 1 (P = 0.45); I² = 0%
Test for overall effect: Z = 0.95 (P = 0.34)

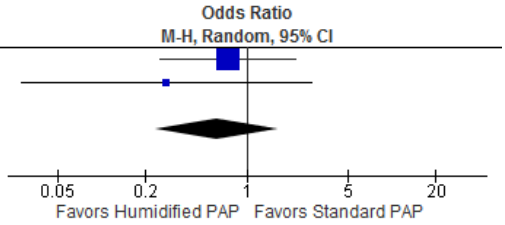


Figure S103. Humidified PAP vs. Standard PAP (Nasal Congestion, incidence)

Study or Subgroup	Humidified PAP Events	Total	Standard PAP Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Neill 2003	19	37	25	37	62.5%	0.51 [0.20, 1.30]
Salgado 2008	3	17	9	22	24.4%	0.31 [0.07, 1.40]
Sommer 2014	2	20	2	20	13.0%	1.00 [0.13, 7.89]
Total (95% CI)		**74**		**79**	**100.0%**	**0.49 [0.23, 1.03]**
Total events	24		36			

Heterogeneity: Tau² = 0.00; Chi² = 0.82, df = 2 (P = 0.66); I² = 0%
Test for overall effect: Z = 1.87 (P = 0.06)

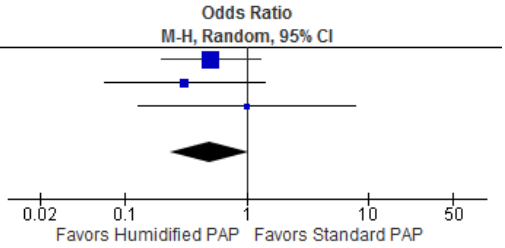


Figure S104. Humidified PAP vs. Standard PAP (Dry nose, incidence)

Study or Subgroup	Humidified PAP Events	Total	Standard PAP Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Neill 2003	9	37	15	37	84.1%	0.47 [0.17, 1.28]
Salgado 2008	1	17	4	22	15.9%	0.28 [0.03, 2.78]
Total (95% CI)		**54**		**59**	**100.0%**	**0.43 [0.17, 1.08]**
Total events	10		19			

Heterogeneity: Tau² = 0.00; Chi² = 0.16, df = 1 (P = 0.68); I² = 0%
Test for overall effect: Z = 1.79 (P = 0.07)

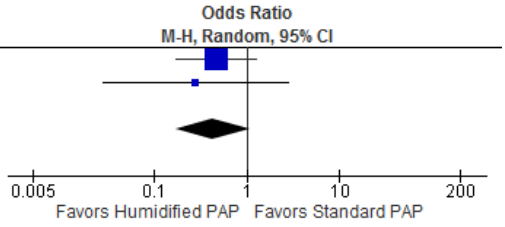


Figure S105. Humidified PAP vs. Standard PAP (Bleeding nose, incidence)

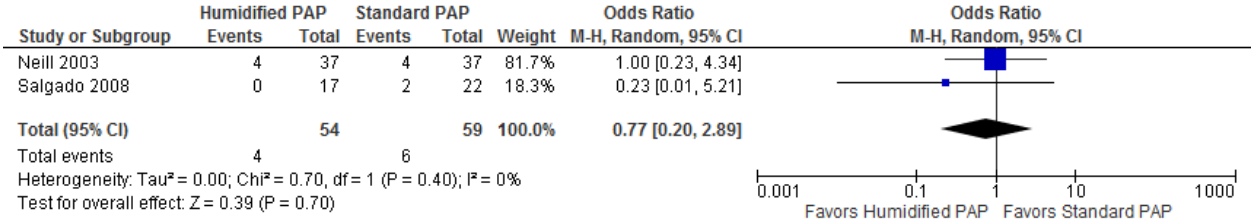


Figure S106. Humidified PAP vs. Standard PAP (Dry Mouth/Throat, incidence)

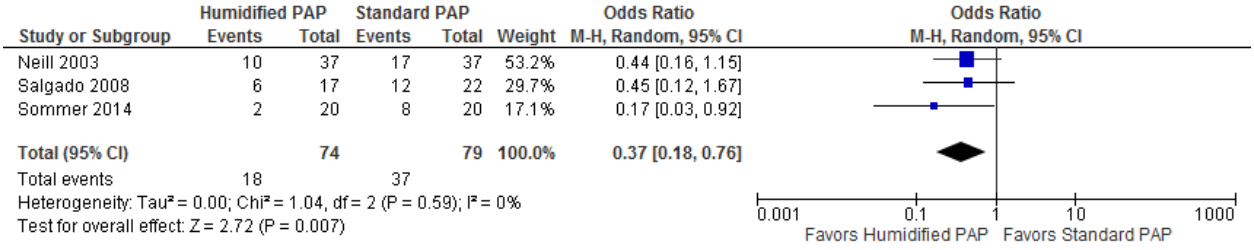


Table S15. Summary of Findings Table for Humidified PAP vs. Standard PAP in the treatment of obstructive sleep apnea in adults

References: Mador 2005 (A); Massie 1999 (B); Neill 2003 (C); Ruhle 2011 (D); Ryan 2009 (E); Salgado 2008 (F); Sommer 2014 (G); Worsnop 2010 (H); Soudorn 2016 (I)

Outcomes	**Quality of the evidence (GRADE)**	**Anticipated absolute effects** (95% CI) **MD between humidified PAP and standard PAP**	**№ of participants (studies)**
Adherence (hrs/night)*	⊕⊕⊕⊕ HIGH	The mean adherence in the humidified PAP group was 0.14 hrs/night greater (0.19 lower to 0.47 greater)	549 (9 RCTs)[A-I]
Self-reported Sleepiness (ESS)*	⊕⊕⊕⊕ HIGH	The mean ESS score in the humidified PAP group was 0.42 lower (1.13 lower to 0.29 higher)	461 (8 RCTs)[A-C,E-I]
Sleep-related QOL* (SAQLI, FOSQ & QSQ combined)	⊕⊕◯◯ LOW [1]	The mean QSQ/SAQLI)/FOSQ in the humidified PAP group was 0 standard deviations different (0.27 lower to 0.27 higher)	206 (3 RCTs)[A,D,I]
		Relative Effect Baseline Risk Comparative risk	
Nasal discharge (incidence)*	⊕⊕◯◯ LOW [1]	237 per 1,000	**164 per 1000** (69 to 339) **OR 0.63** (0.24 to 1.65)	113 (2 RCTs)[C,F]
Nasal congestion (incidence)*	⊕⊕◯◯ LOW [1]	522 per 1,000	**348 per 1000** (201 to 529) **OR 0.49** (0.23 to 1.03)	153 (3 RCTs)[C,F,G]
Dry nose (incidence)*	⊕⊕◯◯ LOW [1]	322 per 1,000	**170 per 1000** (75 to 339) **OR 0.43** (0.17 to 1.08)	113 (2 RCTs)[C,F]

Bleeding nose (incidence)*	⊕⊕◯◯ LOW [1]	102 per 1,000	**80 per 1000** (22 to 247) **OR 0.77** (0.20 to 2.89)	113 (2 RCTs)[C,F]
Dry mouth/throat (incidence)*	⊕⊕⊕◯ MODERATE [1]	536 per 1,000	**276 per 1000** (131 to 487) **OR 0.37** (0.18 to 0.76)	153 (3 RCTs)[C,F,G]
Sinus infection (incidence)*	⊕⊕◯◯ LOW [1]	135 per 1,000	**135 per 1000** (39 to 372) **OR 1.00** (0.26 to 3.79)	74 (1 RCT)[C]
Sinus pain or headache (incidence)*	⊕⊕◯◯ LOW [1]	270 per 1,000	**135 per 1000** (46 to 340) **OR 0.42** (0.13 to 1.39)	74 (1 RCT)[C]
Sore throat (incidence)*	⊕⊕◯◯ LOW [1]	162 per 1,000	**55 per 1000** (11 to 233) **OR 0.30** (0.06 to 1.57)	74 (1 RCT)[C]
Hoarse voice (incidence)*	⊕⊕◯◯ LOW [1]	135 per 1,000	**109 per 1000** (29 to 330) **OR 0.78** (0.19 to 3.15)	74 (1 RCT)[C]
Cough (incidence)*	⊕⊕◯◯ LOW [1]	243 per 1,000	**298 per 1000** (131 to 543) **OR 1.32** (0.47 to 3.69)	74 (1 RCT)[C]
Reduced smell (incidence)*	⊕⊕◯◯ LOW [1]	216 per 1,000	**162 per 1000** (57 to 385) **OR 0.70** (0.22 to 2.27)	74 (1 RCT)[C]

*Critical Outcomes
[1]Quality of evidence was downgraded due to imprecision (i.e., 95% CI of mean difference crosses clinical decision threshold and/or small sample size)

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Table S16. Summary of Possible PAP-Related Side Effects (Adapted from Gay et al, 2006[1])

Interface	**Equipment-Related**
Mask leak	Noise
Skin abrasion/ulceration (pain)	Smell
Mask allergy	Tubing condensation
Conjuntivitis/Sore eyes	Cumbersome equipment
Dermatitis/facial irritation	Spousal intolerance/less intimacy
Claustrophobia	Ramp overuse
	Equipment maintenance and cleaning
Pressure-Related (Airway)	
Rhinitis	**Equipment Failure**

Rhinorrhea Sneezing Desiccation Sinusitis Headache Epistaxis Otitis/Ear pain Air swallowing/aspiration Belching **Pressure-Related** Mouth leak (dry mouth) or mask leak Pressure intolerance Sense of suffocation or difficulty exhaling Tinnitus Aerophagia Pneumoencephalus Central sleep apnea Prolonged oxyhemoglobin desaturations	Lifespan of machine, tubing and mask Recurrence of OSA **General** Periodic limb movements Anxiety Insomnia Headache Fatigue/Feeling tired Chest discomfort

[1] Gay P, Weaver T, Loube D, Iber C; Positive Airway Pressure Task Force.; Standards of Practice Committee.; American Academy of Sleep Medicine. Evaluation of positive airway pressure treatment for sleep related breathing disorders in adults. Sleep. 2006 Mar;29(3):381-401.

Table S17. Summary of Measures of Neurocognitive Function*

Domain of Neurocognitive Function		Tests
Processing speed		Digit Symbol Substitution Test; 8-Choice Reaction Time; Reaction Time, Trail Making A
Attention/Vigilance		PVT-Reaction Time; PVT Lapses; Rapid Visual Information Processing; SteerClear; Cogscreen Pathfinder Number Test – Total Time; Cogscreen Shifting Attention Task
Memory		Digit Span Backwards; Weschler Memory Scale; Benton Visual Retention Test; Verbal Recall; Word Pair Memory Recall; WMS-R Visual Reproduction; Buschke Selective Reminding Test - Sum Recall
Intelligence		Performance IQ Decrement; Weschler Adult Intelligence Scale
Executive Function	*Fluid Reasoning*	Block Design; Executive Maze
	Shifting	Trail Making B; Cogscreen Shifting Attention Task
	Inhibition	Stroop Color-Word
	Updating	PASAT -1, -1.2, -2, -3, -4; Sustained Working Memory
	Generativity	COWAT Letter Fluency

*****Identification of the principal neurocognitive domain assessed by each test was established by the Task Force on the basis of literature review and discussions with Dr Romola Bucks (University of Western Australia) and Dr Gerry Taylor (Case Western Reserve University).