Appendix D: Clinical evidence tables

Study (subsidiary papers)	Benoist 2017[2] (De Ruiter 2018[6])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=99)
Countries and setting	Conducted in Netherlands; Setting: Departments of Otolaryngology and Clinical Neurophysiology
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Mild-moderate
Subgroup analysis within study	Not applicable
Inclusion criteria	>18 years of age, mild-moderate positional (2x AHI in supine vs non), TST in supine 10-90%
Exclusion criteria	Inadequate dental status for oral appliances, CSA, night/shift work, severe CHD, active psychiatric disease, seizure disorder, medication usage for sleeping disorders, muscular or joint problems in head/neck/back area, previous treatment with study options, other OSA treatment, reversible UA abnormalities, pregnancy, self-reported severe snoring in lateral position
Recruitment/selection of patients	Nil else stated
Age, gender and ethnicity	Age - Mean (SD) years: 48 (10). Gender (M:F): 70:30. Ethnicity: Not stated
Further population details	1. BMI: BMI of less than 30 2 kg/m^2. Co-existing conditions: Not stated / Unclear 3. High risk occupation group: Not stated / Unclear 4. Sleepiness: Not stated / Unclear
Indirectness of population	Serious indirectness: mixed severity population was included the severity of the majority of the population was used by taking the mean AHI of the patients included and the study was downgraded for indirectness
Interventions	(n=48) Intervention 1: Positional modifier - Electronic. Sleep position trainer, worn across chest, soft vibration when supine detected, first 2 nights analysis only, next 7 nights training with increasing vibration %, full therapy from day 10 (vibrate every time), repeat 2 minutes after first is ignored. Duration 3 months . Concurrent medication/care: Usual care. Indirectness: No indirectness Further details: 1. Intervention type: Electronic (n=51) Intervention 2: Oral devices. Custom made titrable device (SomnoDent flex), advancement titrated

	according to protocol, 60% advancement at baseline, adjusted as per efficacy and adverse effects (45, 60, 75 or 90% possible). Objective compliance measurement. Duration 3 months. Concurrent medication/care: Usual care. Indirectness: No indirectness.
Funding	Academic or government funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ELECTRONIC POSITIONAL MODIFIER versus ORAL DEVICES

Protocol outcome 1: Quality of life at >1 month
- Actual outcome for Mild-moderate: Change in FOSQ at 3 months; Group 1: mean 0.3 (SD 2.9); n=45, Group 2: mean -0.5 (SD 2.3); n=36
Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status

Protocol outcome 2: Sleepiness score at >1 month
- Actual outcome for Mild-moderate: Change in Epworth at 3 months; Group 1: mean -0.4 (SD 3.9); n=45, Group 2: mean -1.2 (SD 3.6); n=36
Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status

Protocol outcome 3: AHI/RDI at >1 month
- Actual outcome for Mild-moderate: Change in total AHI at 3 months; Group 1: mean -5 (SD 6.3); n=48, Group 2: mean -3.7 (SD 5.4); n=51
Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status

Protocol outcome 4: Supine AHI/RDI at >1 month
- Actual outcome for Mild-moderate: Change in supine AHI at 3 months; Group 1: mean -11.4 (SD 18.2); n=45, Group 2: mean -14.5 (SD 18.1); n=36
Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status

Protocol outcome 5: ODI at >1 month
- Actual outcome for Mild-moderate: Change in ODI at 3 months; Group 1: mean -4.3 (SD 6); n=45, Group 2: mean -3.1 (SD 5.4); n=36
Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status

Protocol outcome 6: Reduction in supine sleeping at >1 month - Actual outcome for Mild-moderate: Change in supine sleeping percentage at 3 months; Group 1: mean -28 (SD 20); n=45, Group 2: mean -0.9 (SD 19.6); n=36 Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status Protocol outcome 7: Minor adverse effects of Tx at >1 month - Actual outcome for Mild-moderate: Minor AEs (pain, dry mouth, complaints about sleep quality or partner's complaints) at 3 months; Group 1: 13/48, Group 2: 26/51 Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status Protocol outcome 8: Patient preference at >1 month - Actual outcome for Mild-moderate: Adherence (% 4h/n, 5d/wk) at 3 months; Group 1: mean 89.3 (SD 22.4); n=45, Group 2: mean 81.3 (SD 30); n=36 Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: Withdrew consent ; Group 2 Number missing: 15, Reason: 4 withdrew consent, 1 AE, 5 lost to follow-up, 5 insufficient dental status	
Protocol outcomes not reported by the study	Mortality at >1 month; Driving outcomes at >1 month; Neurocognitive outcomes at >1 month; HbA1c at >1 month; CV events at >1 month; Systolic BP at >1 month

Study	**Berry 2019[3]**
Study type	RCT (Patient randomised; Crossover: no washout period)
Number of studies (number of participants)	1 (n=117)
Countries and setting	Conducted in USA; Setting: Clayton Sleep Institute, Missouri, USA
Line of therapy	Not applicable
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Moderate
Subgroup analysis within study	Not applicable

Inclusion criteria	The main inclusion criteria for POSA included a total night AHI of ≥ 15 events/h, or AHI > 10 and < 15 events/h with the Epworth Sleepiness Scale (ESS) score > 10. The supine AHI was required to be at least twice the non-supine AHI, and the non-supine AHI < 10 events/h or < 5 events/h in milder participants with a total AHI > 10 and < 15 events/h. Participants were required to have a minimum of 30% sleep time in both supine and non-supine positions during the diagnostic PSG. The minimum sleep time of 30% was chosen to increase the chance that an acceptable amount of non-rapid eye movement (NREM) and rapid eye movement (REM) sleep would be recorded in both positions (supine or non-supine).
Exclusion criteria	Exclusion criteria consisted of prior surgery to treat OSA (nasal surgery alone not an exclusion), current or past PAP treatment for OSA (CPAP use only during the titration portion of a prior split sleep study not an exclusion), or other current therapy to treat OSA. Other exclusions included unstable or severe medical conditions as well as treatment with medications that at the discretion of the local primary investigator were felt to potentially impair sleep quality, increase daytime sleepiness, or adversely affect the participant's ability to safely complete the study.
Age, gender and ethnicity	Age - Mean (SD): 51.1 (12.6). Gender (M:F): 70/47. Ethnicity: unclear
Further population details	1. BMI: BMI >/=30 (30.3(5.5)). 2. Co-existing conditions: Not stated / Unclear 3. High risk occupation group: Not stated / Unclear 4. Sleepiness: ESS >9 (10(4.9)).
Indirectness of population	Serious indirectness: patients with mild moderate and severe AHI included
Interventions	(n=117) Intervention 1: Positional modifier - Electronic. The SPT device is a rechargeable battery-operated device worn around the chest in an elasticized torso band and contains a digital accelerometer that continuously monitors a patient's sleep position. When using the device, if a patient turns to the supine position, it will react with a soft vibration that will continue until the patient returns to a non-supine position. Initiation of patient therapy begins with an adaptation program intended to customize the vibrational stimuli to the patient's needs and gives the patient the opportunity to gradually adjust to wearing and being treated by the device. Duration 6 weeks. Concurrent medication/care: N/A. Indirectness: No indirectness Further details: 1. Intervention type: Comments: 58 patients were randomised to SPT group first, 57 patients allocated to SPT second (n=117) Intervention 2: CPAP. APAP. Patients were set up on an APAP device (Dreamstation Auto, Philips Respironics, Murrysville, Pennsylvania, USA) with pressure range settings of 4 to 20 cmH2O, and a mask as tolerated. Mask fitting and device education were performed at the start of treatment. The standard masks used were the Wisp (nasal), Nuance (nasal pillows) and Amara View (full face) all manufactured by Philips Respironics. If these masks were not satisfactory, the individual sites could try other mask options of their choice. Sleep technologists were available by telephone at any time to intervene for participant issues. Scheduled telephone calls at 1 day, 1 week, and 4 weeks were made to answer participant questions. Mask changes were allowed as indicated for participant comfort. APAP adherence was determined at a two-week clinic visit and the participant encouraged to maintain or improve (as indicated by the adherence data) nightly

	use for the entire duration of sleep. Duration 6 weeks. Concurrent medication/care: N/A. Indirectness: No indirectness Further details: 1. Intervention type: Electronic (APAP).
Funding	Study funded by industry

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ELECTRONIC versus CPAP

Protocol outcome 1: Quality of life at >1 month
- Actual outcome for Moderate: FOSQ at 6 weeks; Group 1: mean 17.32 (SD 2.18); n=110, Group 2: mean 17.62 (SD 1.87); n=110
Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3
- Actual outcome for Moderate: SF36 physical component at 6 weeks; Group 1: mean 51.1 (SD 7.44); n=110, Group 2: mean 51.46 (SD 7.13); n=110
Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3
- Actual outcome for Moderate: SF36 mental component at 6 weeks; Group 1: mean 51.52 (SD 8.96); n=110, Group 2: mean 52.4 (SD 6.97); n=110
Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3
- Actual outcome for Moderate: SF36 vitality at 6 weeks; Group 1: mean 56.5 (SD 18.4); n=110, Group 2: mean 59.5 (SD 16.3); n=110
Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3

Protocol outcome 2: Sleepiness score at >1 month
- Actual outcome for Moderate: ESS at 6 weeks; Group 1: mean 8.27 (SD 4.98); n=110, Group 2: mean 7.37 (SD 3.98); n=110
Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3

Protocol outcome 3: AHI/RDI at >1 month
- Actual outcome for Moderate: AHI total at 6 weeks; Group 1: mean 7.29 (SD 6.76); n=110, Group 2: mean 3.71 (SD 5.06); n=110
Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3
- Actual outcome for Moderate: AHI supine at 6 weeks; Group 1: mean 9.67 (SD 21.75); n=110, Group 2: mean 5.68 (SD 9.84); n=110
Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3

Protocol outcome 4: ODI at >1 month
- Actual outcome for Moderate: ODI - desaturation index 3% (events/h) at 6 weeks; Group 1: mean 3.82 (SD 4.82); n=110, Group 2: mean 1.58 (SD 2.46);

n=110 Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3 Protocol outcome 5: Reduction in supine sleeping at >1 month - Actual outcome for Moderate: Supine time (% TST) at 6 weeks; Group 1: mean 7.72 (SD 16.5); n=110, Group 2: mean 46.9 (SD 27.38); n=110 Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3 Protocol outcome 6: Patient preference at >1 month - Actual outcome for Moderate: Adherence (percentage of nights with >=4 hours use) at 6 weeks; Group 1: mean 74 % (SD 25.3); n=111, Group 2: mean 63.9 % (SD 30.9); n=111 Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 2 - Actual outcome for Moderate: Preference (assuming both devices treated my positional sleep apnoea I would prefer to use this device) at 6 weeks; Group 1: 58/110, Group 2: 51/110 Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - High; Indirectness of outcome: No indirectness ; Group 1 Number missing: 4; Group 2 Number missing: 3	
Protocol outcomes not reported by the study	Mortality at >1 month; Supine AHI/RDI at >1 month; Minor adverse effects of Tx at >1 month; Driving outcomes at >1 month; Neurocognitive outcomes at >1 month; HbA1c at >1 month; CV events at >1 month; Systolic BP at >1 month

Study	**Cartwright 1991[5]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in USA; Setting: not reported
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 2 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Moderate-severe

Subgroup analysis within study	Not applicable
Inclusion criteria	AHI at least 12.5, male, positional OSA
Exclusion criteria	Not reported
Recruitment/selection of patients	Not reported
Age, gender and ethnicity	Age - Mean (SD) years: 48 (SD 10). Gender (M:F): All male. Ethnicity: Not stated
Further population details	1. BMI: Not stated / Unclear 2. Co-existing conditions: Not stated / Unclear 3. High risk occupation group: Not stated / Unclear 4. Sleepiness: Not stated / Unclear
Indirectness of population	Serious indirectness: mixed severity population was included the severity of the majority of the population was used by taking the mean AHI of the patients included and the study was downgraded for indirectness
Interventions	(n=15) Intervention 1: Positional modifier - Electronic. Electronic positional alarm . Duration 2 months. Concurrent medication/care: Lifestyle advice (lose or maintain weight, exercise 20 minutes a day, no alcohol after 18:00, sleep on your side). Indirectness: No indirectness (n=15) Intervention 2: Oral devices. Tongue retaining device. Duration 2 months . Concurrent medication/care: Lifestyle advice. Indirectness: No indirectness (n=15) Intervention 3: No active treatment. Lifestyle advice only. Duration 2 months. Concurrent medication/care: Nil else stated. Indirectness: No indirectness
Funding	Academic or government funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ELECTRONIC P OSITIONAL MODIFIER versus ORAL DEVICES

Protocol outcome 1: AHI/RDI at >1 month
- Actual outcome for Moderate-severe: AHI at 2 months; Group 1: mean 20.8 (SD 29.2); n=15, Group 2: mean 11.38 (SD 15.05); n=15
Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness.

Protocol outcome 2: Supine AHI/RDI at >1 month
- Actual outcome for Moderate-severe: Supine AHI at 2 months; Group 1: mean 32.86 (SD 72.2); n=15, Group 2: mean 25.9 (SD 39.4); n=15
Risk of bias: All domain - Very high, Selection - Very high, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness.

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ELECTRONIC P OSITIONAL MODIFIER versus NO ACTIVE TREATMENT Protocol outcome 1: AHI/RDI at >1 month - Actual outcome for Moderate-severe: AHI at 2 months; Group 1: mean 20.8 (SD 29.2); n=15, Group 2: mean 7.72 (SD 9.91); n=15 Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 2: Supine AHI/RDI at >1 month - Actual outcome for Moderate-severe: Supine AHI at 2 months; Group 1: mean 32.9 (SD 72.2); n=15, Group 2: mean 26.8 (SD 59.3); n=15 Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at >1 month; Mortality at >1 month; Sleepiness score at >1 month; ODI at >1 month; Reduction in supine sleeping at >1 month; Minor adverse effects of Tx at >1 month; Driving outcomes at >1 month; Neurocognitive outcomes at >1 month; Patient preference at >1 month; HbA1c at >1 month; CV events at >1 month; Systolic BP at >1 month

Study	**Jackson 2015[11]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=86)
Countries and setting	Conducted in Australia; Setting: Institute for Breathing and Sleeping in Austin, Australia
Line of therapy	Mixed line
Duration of study	Intervention + follow up: 1 month
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Moderate
Subgroup analysis within study	Not applicable
Inclusion criteria	At least 18 years, supine OSA, AHI >/=10, mixed sleep pattern
Exclusion criteria	O2 sats less than 75%, co-existing disease, unsafe for driving, unable to perform moderate exercise
Recruitment/selection of patients	Nil else stated
Age, gender and ethnicity	Age - Mean (SD) years: 49.5 (11.4). Gender (M:F): 78:22. Ethnicity: Not stated

Further population details	1. BMI: BMI of 30 2 kg/m^2 or more. Co-existing conditions: Not stated / Unclear 3. High risk occupation group: Low risk group 4. Sleepiness: ESS >9
Extra comments	Mild sleepiness (mean ESS 10), 79% overweight or obese
Indirectness of population	Serious indirectness: mixed severity population was included the severity of the majority of the population was used by taking the mean AHI of the patients included and the study was downgraded for indirectness
Interventions	(n=47) Intervention 1: Positional modifier - Physical. Cotton worn around the chest, tennis ball in pocket at the rear + the advice applied to control programme. Duration 4 weeks . Concurrent medication/care: Usual care. Indirectness: No indirectness. (n=39) Intervention 2: No active treatment. "Ten point guide to Improving your sleep apnoea with healthy lifestyle changes" including suggestions for exercise, weight loss, sleep in the lateral position. Duration 4 weeks . Concurrent medication/care: Usual care. Indirectness: No indirectness
Funding	Academic or government funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PHYSICAL POSITIONAL MODIFIER versus LIFESTYLE ADVICE ONLY

Protocol outcome 1: Quality of life at >1 month
- Actual outcome for Moderate: FOSQ at 1 month; Group 1: mean 3.5 (SD 0.4); n=47, Group 2: mean 3.3 (SD 0.6); n=39
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: ; Group 2 Number missing: 2

Protocol outcome 2: Sleepiness score at >1 month
- Actual outcome for Moderate: Epworth at 1 month; Group 1: mean 8.1 (SD 4.1); n=47, Group 2: mean 9.4 (SD 6.6); n=39
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: ; Group 2 Number missing: 2

Protocol outcome 3: AHI/RDI at >1 month
- Actual outcome for Moderate: Final AHI at 1 month; Group 1: mean 10.8 (SD 9.9); n=47, Group 2: mean 16.8 (SD 15.9); n=39
Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: ; Group 2 Number missing: 2

Protocol outcome 4: Supine AHI/RDI at >1 month
- Actual outcome for Moderate: Final supine AHI at 1 month; Group 1: mean 35.5 (SD 27.7); n=47, Group 2: mean 37.9 (SD 25.5); n=39
Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: ; Group 2 Number missing: 2

Protocol outcome 5: Reduction in supine sleeping at >1 month - Actual outcome for Moderate: % of TST supine at 1 month; Group 1: mean 8.7 (SD 1.5); n=47, Group 2: mean 24 (SD 23.1); n=39 Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: ; Group 2 Number missing: 2 Protocol outcome 6: Systolic BP at >1 month - Actual outcome for Moderate: Systolic BP at 1 month; Group 1: mean 125.7 (SD 9.6); n=47, Group 2: mean 133.4 (SD 15.2); n=39 Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 3, Reason: ; Group 2 Number missing: 2	
Protocol outcomes not reported by the study	Mortality at >1 month; ODI at >1 month; Minor adverse effects of Tx at >1 month; Driving outcomes at >1 month; Neurocognitive outcomes at >1 month; Patient preference at >1 month; HbA1c at >1 month; CV events at >1 month

Study	**Laub 2017[13]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=101)
Countries and setting	Conducted in Denmark; Setting: sleep clinic
Line of therapy	1st line
Duration of study	Intervention + follow up: 2 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: ambulatory polygraphy
Stratum	Mild-moderate
Subgroup analysis within study	Not applicable
Inclusion criteria	Supine AHI 2x non-supine, supine AHI >10, non-supine AHI <10, 10-90% TST in supine position, daytime tiredness or disturbed sleep or snoring
Exclusion criteria	<18, CSA, night/shift work, CHF, COPD, seizures, mental retardation, memory or psychiatric disorders, pacemaker, unable to sleep in lateral positions, pregnancy, planned weight reduction or smoking cessation
Recruitment/selection of patients	Consecutive referrals screened
Age, gender and ethnicity	Age - Mean (SD) years: 51 (13). Gender (M:F): 75:25. Ethnicity: Not stated

Further population details	1. BMI: Not stated / Unclear 2. Co-existing conditions: Not stated / Unclear 3. High risk occupation group: Not stated / Unclear 4. Sleepiness: Not stated / Unclear
Indirectness of population	Serious indirectness: mixed severity population was included the severity of the majority of the population was used by taking the mean AHI of the patients included and the study was downgraded for indirectness
Interventions	(n=52) Intervention 1: Positional modifier - Electronic. SPT, electronic, vibration on chest, 2 days of analysis, 7 days of gradual training, from 10 days onwards vibration on each supine position with reminders every 2 minutes if not addressed. Duration 2 months. Concurrent medication/care: Usual care. Indirectness: No indirectness Further details: 1. Intervention type: Electronic (Positional modifier). (n=49) Intervention 2: No active treatment. No details provided. Duration 2 months. Concurrent medication/care: Usual care. Indirectness: No indirectness Further details: 1. Intervention type: Not stated / Unclear (usual care).
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ELECTRONIC POSITIONAL MODIFIER versus NO ACTIVE TREATMENT

Protocol outcome 1: Sleepiness score at >1 month
- Actual outcome for Mild-moderate: Epworth at 2 months; Group 1: mean 9.2 (SD 3.9); n=37, Group 2: mean 10.9 (SD 4.1); n=37
Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 15, Reason: 5 AEs, 2 lack of efficacy, 5 lost to FU, 3 other; Group 2 Number missing: 12, Reason: 7 withdrew, 2 lost to follow up, 3 other Tx

Protocol outcome 2: AHI/RDI at >1 month
- Actual outcome for Mild-moderate: AHI total at 2 months; Group 1: mean 10.4 (SD 9.4); n=37, Group 2: mean 17.5 (SD 10.1); n=37
Risk of bias: All domain - Very high, Selection - High, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 15, Reason: 5 AEs, 2 lack of efficacy, 5 lost to FU, 3 other; Group 2 Number missing: 12, Reason: 7 withdrew, 2 lost to follow up, 3 other Tx

Protocol outcome 3: Supine AHI/RDI at >1 month
- Actual outcome for Mild-moderate: AHI supine at 2 months; Group 1: mean 17.5 (SD 22.2); n=37, Group 2: mean 33.1 (SD 21); n=37
Risk of bias: All domain - Very high, Selection - High, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 15, Reason: 5 AEs, 2 lack of efficacy, 5 lost to FU, 3 other; Group 2 Number missing: 12, Reason: 7 withdrew, 2 lost to follow up, 3 other Tx

Protocol outcome 4: Reduction in supine sleeping at >1 month - Actual outcome for Mild-moderate: Time supine % at 2 months; Group 1: mean 17.3 (SD 17.5); n=37, Group 2: mean 38.7 (SD 20.8); n=37 Risk of bias: All domain - Very high, Selection - High, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 15, Reason: 5 AEs, 2 lack of efficacy, 5 lost to FU, 3 other; Group 2 Number missing: 12, Reason: 7 withdrew, 2 lost to follow up, 3 other Tx Protocol outcome 5: Patient preference at >1 month - Actual outcome for Mild-moderate: Adherence at 2 months; Mean; , Comments: 36 patients results only for intervention group (positional modifier) at 2 months - SPT use of >4 hours on average 75.5 % (SD, 21.2) of the nights Overall SPT was used on average 437 (SD, 84) minutes per night (7.3 hours per night); Risk of bias: All domain - Very high, Selection - High, Blinding - High, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 15, Reason: 5 AEs, 2 lack of efficacy, 5 lost to FU, 3 other; Group 2 Number missing: 12, Reason: 7 withdrew, lost to follow up, 3 other Tx	
Protocol outcomes not reported by the study	Quality of life at >1 month; Mortality at >1 month; ODI at >1 month; Minor adverse effects of Tx at >1 month; Driving outcomes at >1 month; Neurocognitive outcomes at >1 month; HbA1c at >1 month; CV events at >1 month; Systolic BP at >1 month

Study	Mok 2020[15]
Study type	RCT (Patient randomised; Crossover: 1 week)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in Singapore; Setting: This is a crossover RCT conducted at Changi General Hospital, a 1000-bed teaching hospital in Singapore
Line of therapy	1st line
Duration of study	Intervention + follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Moderate: N/A
Subgroup analysis within study	Not applicable: N/A
Inclusion criteria	Patient eligibility criteria included a diagnosis of POSA, age 21 years and above, an Epworth Sleepiness Scale (ESS) of 10–16 and no CPAP treatment or PT treatment for the past 6 months. The diagnosis of POSA was based on all following three criteria: (1) a full in-laboratory overnight polysomnography with total Apnoea/Hypopnoea Index (AHI)>10/hour and non-supine AHI<10/hour, (2) supine AHI greater than or equal to two times the non-supine AHI, (3) at least 15 min of supine and non-supine sleep.
Exclusion criteria	Patients were excluded if they had excessive daytime sleepiness (ESS≥17), were commercial drivers, unable or unwilling to use both treatments (CPAP and PT) or had concurrent use of therapy for OSA such as mandibular advancement splints. They were also excluded if they had uncontrolled severe medical conditions or conditions that precluded their ability to lie in a non-supine position
Recruitment/selection of patients	Patients were recruited from sleep medicine clinics between April 2017 and August 2018 and final patient follow-up was completed in December 2018. Physicians provided a brief description of the study to eligible patients and enquired if they were keen to be contacted by the study's research staff for further details. If a patient was agreeable to proceed with study participation after an appointment with the research staff, written informed consent was obtained.
Age, gender and ethnicity	Age - Mean (SD): 44(11.2). Gender (M:F): 29/11. Ethnicity: Chinese - 29(72.5%), Malay - 7 (17.5%), Indian - 3(7.5%), others -1(2.5%)

Further population details	1. BMI: BMI <30 (26.1). 2. Co-existing conditions: Not applicable (hypertension -20%, hyperlipidaemia 30%, diabetes mellitus 7.5%, heart disease 5%, depression 2.5%). 3. High risk occupation group: Not applicable 4. Sleepiness: ESS >9 (12.1 (2.6)).
Indirectness of population	No indirectness
Interventions	(n=41) Intervention 1: Positional modifier - Physical. Positional modifier - Patients were provided with the Night Shift positional device which was recently approved by FDA in 2014 for the treatment of POSA. The Night Shift is a small, vibratory positional therapy (PT) device that is worn at the back of the neck using a latex-free silicone rubber strap. When a supine position is detected, the device vibrates with increasing intensity until the subject changes to a non-supine position. Information recorded by the PT device includes usage hours each night, percentage of time in a non-supine position, sleep efficiency, frequency of awakenings and data can be stored for at least 4 months. Duration 8 weeks. Concurrent medication/care: N/A. Indirectness: No indirectness Further details: 1. Intervention type: Physical (positional modifier). (n=41) Intervention 2: CPAP. CPAP - For CPAP therapy, patients were provided with Airsense 10 (Resmed) CPAP devices in the automated mode. The automated algorithm in the CPAP device allows CPAP pressures to vary according to the patient's requirements during the night. Mask fitting and CPAP education was conducted by experienced sleep technologists prior to CPAP commencement. Duration 8 weeks. Concurrent medication/care: N/A. Indirectness: No indirectness Further details: 1. Intervention type: Electronic (CPAP).
Funding	Academic or government funding - The study was funded by the National Medical Research Council Singapore

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PHYSICAL versus CPAP

Protocol outcome 1: Quality of life at >1 month
- Actual outcome for Moderate: SF36 physical functioning at 8 weeks; Group 1: mean 77.1 (SD 22.7); n=41, Group 2: mean 80.6 (SD 18.9); n=40
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment
- Actual outcome for Moderate: SF36 Energy/fatigue at 8 weeks; Group 1: mean 49.4 (SD 19.4); n=41, Group 2: mean 54 (SD 18.2); n=40
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out

after initial few weeks as he wanted to proceed with CPAP treatment
- Actual outcome for Moderate: SF36 emotional well-being at 8 weeks; Group 1: mean 70.4 (SD 14.3); n=41, Group 2: mean 73.1 (SD 17.2); n=40
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment
- Actual outcome for Moderate: FOSQ
at 8 weeks; Group 1: mean 16.9 (SD 2.3); n=41, Group 2: mean 17.5 (SD 2); n=40
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment

Protocol outcome 2: Sleepiness score at >1 month
- Actual outcome for Moderate: ESS at 8 weeks; Group 1: mean 10.9 (SD 4); n=41, Group 2: mean 8.9 (SD 4.5); n=40
Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment

Protocol outcome 3: AHI/RDI at >1 month
- Actual outcome for Moderate: AHI at 8 weeks; Group 1: mean 13 (SD 13.8); n=41, Group 2: mean 4 (SD 3.2); n=40
Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment

Protocol outcome 4: Supine AHI/RDI at >1 month
- Actual outcome for Moderate: Supine AHI at 8 weeks; Group 1: mean 18.5 (SD 24.4); n=41, Group 2: mean 5.6 (SD 7.2); n=40
Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment

Protocol outcome 5: ODI at >1 month
- Actual outcome for Moderate: ODI at 8 weeks; Group 1: mean 5.9 (SD 10.5); n=41, Group 2: mean 0.8 (SD 0.9); n=40
Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment

Protocol outcome 6: Reduction in supine sleeping at >1 month
- Actual outcome for Moderate: Time spent in supine position at 8 weeks; Group 1: mean 75.1 Minutes (SD 104.2); n=41, Group 2: mean 251.2 Minutes (SD 109.7); n=40

Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment Protocol outcome 7: Minor adverse effects of Tx at >1 month - Actual outcome for Moderate: Adverse effects at 8 weeks; Group 1: 4/41, Group 2: 2/40; Comments: 2 patients in CPAP group reported facial rash. 3 patients in PT group reported neck itchiness or redness during PT treatment. 1 patient reported neck pain in the first week of PT use and was subsequently diagnosed with servical spondylosis Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment Protocol outcome 8: Patient preference at >1 month - Actual outcome for Moderate: Preference at 8 weeks; Group 1: 8/41, Group 2: 24/40 Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: 0; Group 2 Number missing: 1, Reason: 1 patient dropped out after initial few weeks as he wanted to proceed with CPAP treatment	
Protocol outcomes not reported by the study	Mortality at >1 month; Driving outcomes at >1 month; Neurocognitive outcomes at >1 month; HbA1c at >1 month; CV events at >1 month; Systolic BP at >1 month

Study	**Skinner 2008[26]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=20)
Countries and setting	Conducted in New Zealand; Setting: Not stated

Line of therapy	Not applicable
Duration of study	Intervention + follow up: 1 month
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Mild-moderate
Subgroup analysis within study	Not applicable
Inclusion criteria	AHI >5 but <10, supine sleeping for at least 50 minutes in study night, time spent supine 10-90% of total night, sAHI 2x nsAHI
Exclusion criteria	Other conditions that could affect sleep
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): 56 (10). Gender (M:F): Not stated. Ethnicity: Not stated
Further population details	1. BMI: Not stated / Unclear 2. Co-existing conditions: Not stated / Unclear 3. High risk occupation group: Not stated / Unclear 4. Sleepiness: Not stated / Unclear
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Positional modifier - Physical. TASB (tennis ball technique). Duration 1 month. Concurrent medication/care: Usual care. Indirectness: No indirectness (n=20) Intervention 2: CPAP. nCPAP, one night with variable pressure machine for titration and subsequent month with fixed pressure machine. Duration 1 month. Concurrent medication/care: Usual care. Indirectness: No indirectness.
Funding	Equipment / drugs provided by industry

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PHYSICAL POSITIONAL MODIFIER versus CPAP

Protocol outcome 1: Quality of life at >1 month
- Actual outcome for Mild: SF36 - physical at 1 month; Group 1: mean 44.5 (SD 11); n=20, Group 2: mean 44.6 (SD 10.6); n=20
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness
- Actual outcome for Mild: SF36 - mental at 1 month; Group 1: mean 50.3 (SD 9.5); n=20, Group 2: mean 49.7 (SD 8.5); n=20
Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness
- Actual outcome for Mild: FOSQ at 1 month; Group 1: mean 12.4 (SD 2.7); n=20, Group 2: mean 12.8 (SD 1.8); n=20

Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 2: Sleepiness score at >1 month - Actual outcome for Mild: Epworth at 1 month; Group 1: mean 11.6 (SD 5.8); n=20, Group 2: mean 10.4 (SD 4.1); n=20 Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 3: AHI/RDI at >1 month - Actual outcome for Mild: AHI at 1 month; Group 1: mean 12 (SD 14.5); n=20, Group 2: mean 4.9 (SD 3.9); n=20 Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 4: Supine AHI/RDI at >1 month - Actual outcome for Mild: Supine AHI at 1 month; Group 1: mean 37.75 (SD 44.6); n=20, Group 2: mean 21.5 (SD 32.7); n=20 Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 5: Reduction in supine sleeping at >1 month - Actual outcome for Mild: Supine sleeping percentage at 1 month; Group 1: mean 6.3 (SD 5.8); n=20, Group 2: mean 35.4 (SD 34.1); n=20 Risk of bias: All domain - Low, Selection - Low, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 6: Patient preference at >1 month - Actual outcome for Mild: Diary reported compliance (h/night) at 1 month; Group 1: mean 7.4 (SD 1.6); n=20, Group 2: mean 4.9 (SD 1.9); n=20 Risk of bias: All domain - Very high, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Mortality at >1 month; ODI at >1 month; Minor adverse effects of Tx at >1 month; Driving outcomes at >1 month; Neurocognitive outcomes at >1 month; HbA1c at >1 month; CV events at >1 month; Systolic BP at >1 month