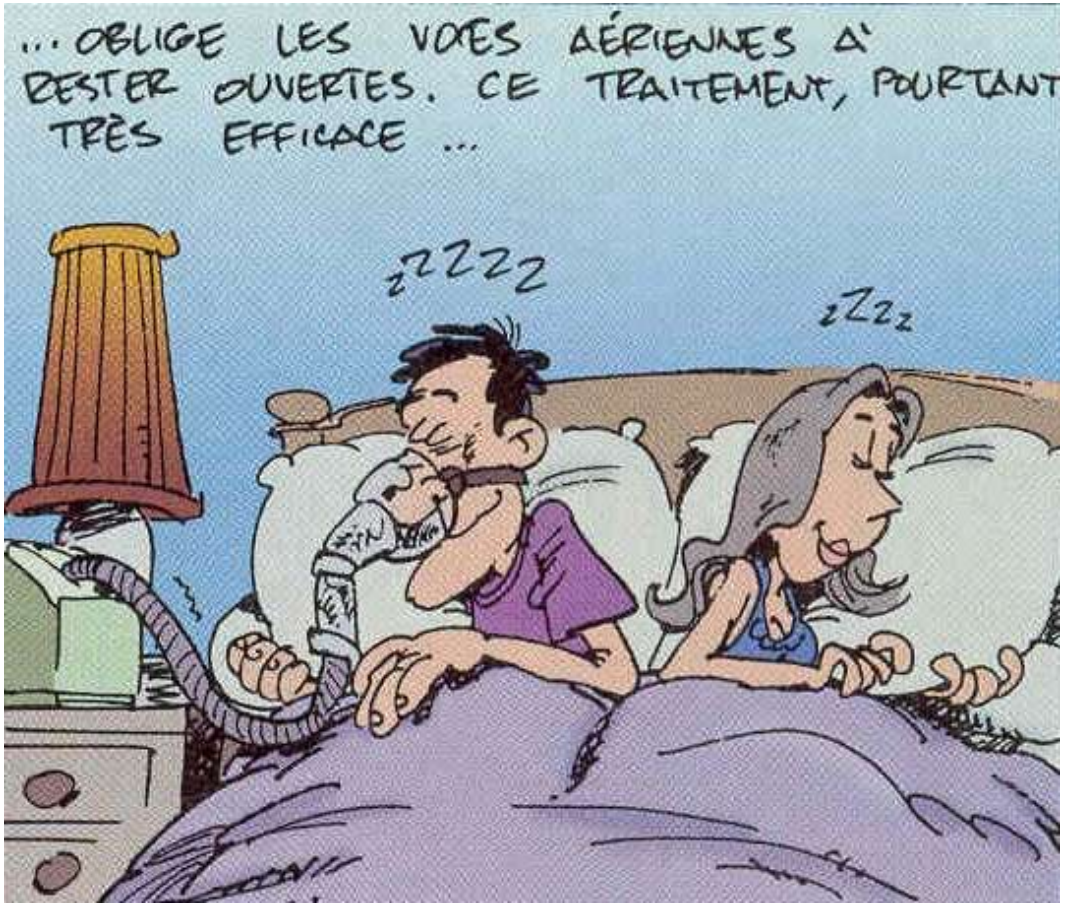
PPC: référence



Mais…


...SE RÉVÈLE PARFOIS TRÈS CONTRAIGNANT.
VRRRRR...
KOFF KOFF
AAAARGH!

Orthèse d'avancée mandibulaire

L'Orthèse d'Avancée Mandibulaire(OAM) est la seule thérapeutique alternative pour traiter le Syndrome d'apnées obstructives du sommeil

C'est le sujet de cet exposé.

Orthèse d'avancée mandibulaire

Bernard FLEURY

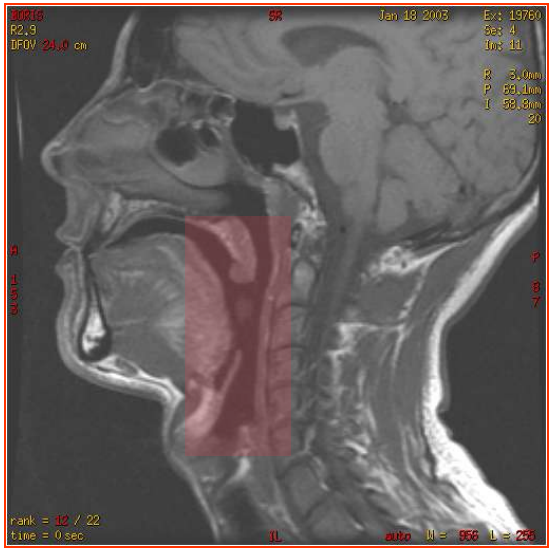
Centre d'Explorations et de Traitement des Troubles du Sommeil
Hôpital Saint Antoine
Paris

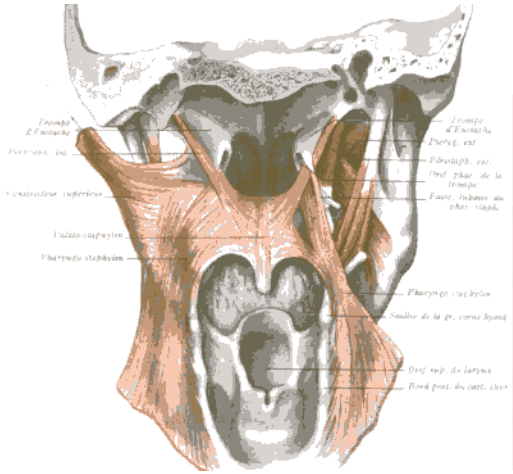
Obligation de déclaration des liens d'intérêts prévu à l'article L4113-13 du Code de la Santé Publique

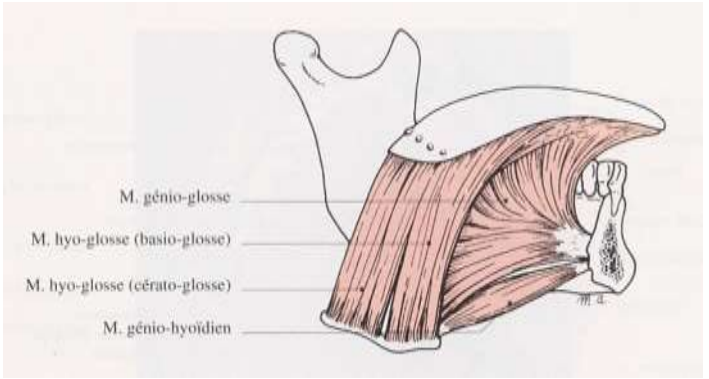
Dr Bernard FLEURY

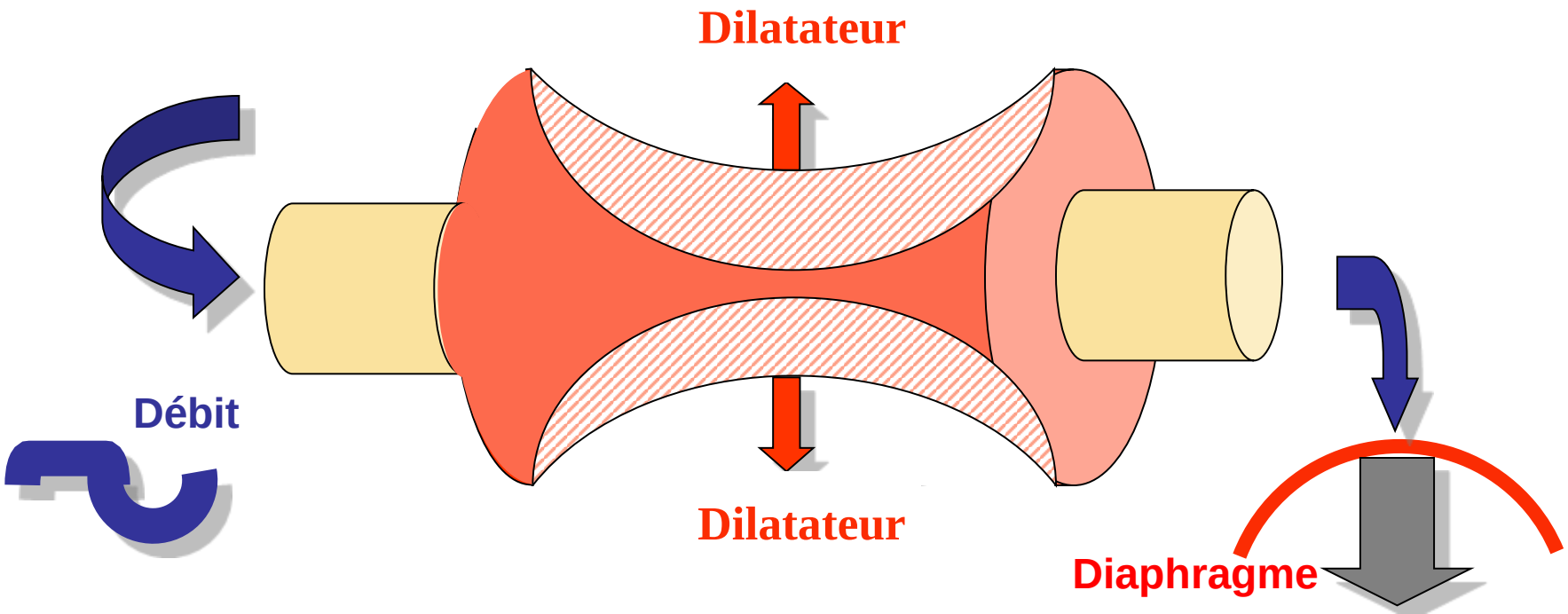
Période 2009-2010	Industrie pharmaceutique, prestataire, fabriquant d'orthèses ou de ventilateurs
Coordonnateur études	
Investigateur études	
Consultant 2009-2010	**Société Orthosom® fabriquant d'orthèse AMO®**
Invitation à des congrès	
Orateur rémunéré	
Actionnaire	

- **Le présent**
  - **Mécanisme d'action**
  - *Evaluation de l'éfficaité*
    - *Sur la conduite automobile*
    - *Sur les marqueurs de risques cardio-vasculaires*
  - *Contre indications*
  - *Effets secondaires*
  - *Procedure de titration*
  - *Indications*
- *Le futur*






M. génio-glosse
M. hyo-glosse (basio-glosse)
M. hyo-glosse (cérato-glosse)
M. génio-hyoïdien


Dilatateur
Débit
Dilatateur
Diaphragme

Reflexe

The effect of mandibular advancement appliances on awake upper airway and masticatory muscle activity in patients with obstructive sleep apnoea

Ama Johal, Gulsharondip Gill, Anthony Ferman and Kieron McLaughlin

Clin Physiol Funct Imaging (2007) **27,** pp47–53

Table 1 Electromyographic data (microvolts) at baseline (T1) and with the mandibular advancement appliance *in situ* (T2) (n = 50) GH – geniohyoid muscle ML – masseter muscle left GG – genioglossus muscle MR – masseter muscle right.

		Range		
Muscles	**Median**	**Minimum**	**Maximum**	***P*-value**
GH				
T1	56·6	29·2	118·6	<0·001
T2	67·0	33·0	151·7	
GG				
T1	72·9	16·7	136·50	0·041
T2	88·9	25·1	130·84	
ML				
T1	25·4	14·3	167·3	<0·001
T2	45·7	16·6	207·7	
MR				
T1	25·1	8·90	234·1	<0·001
T2	52·6	16·5	232·6	

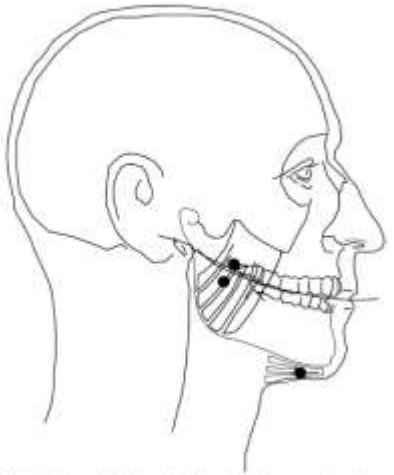
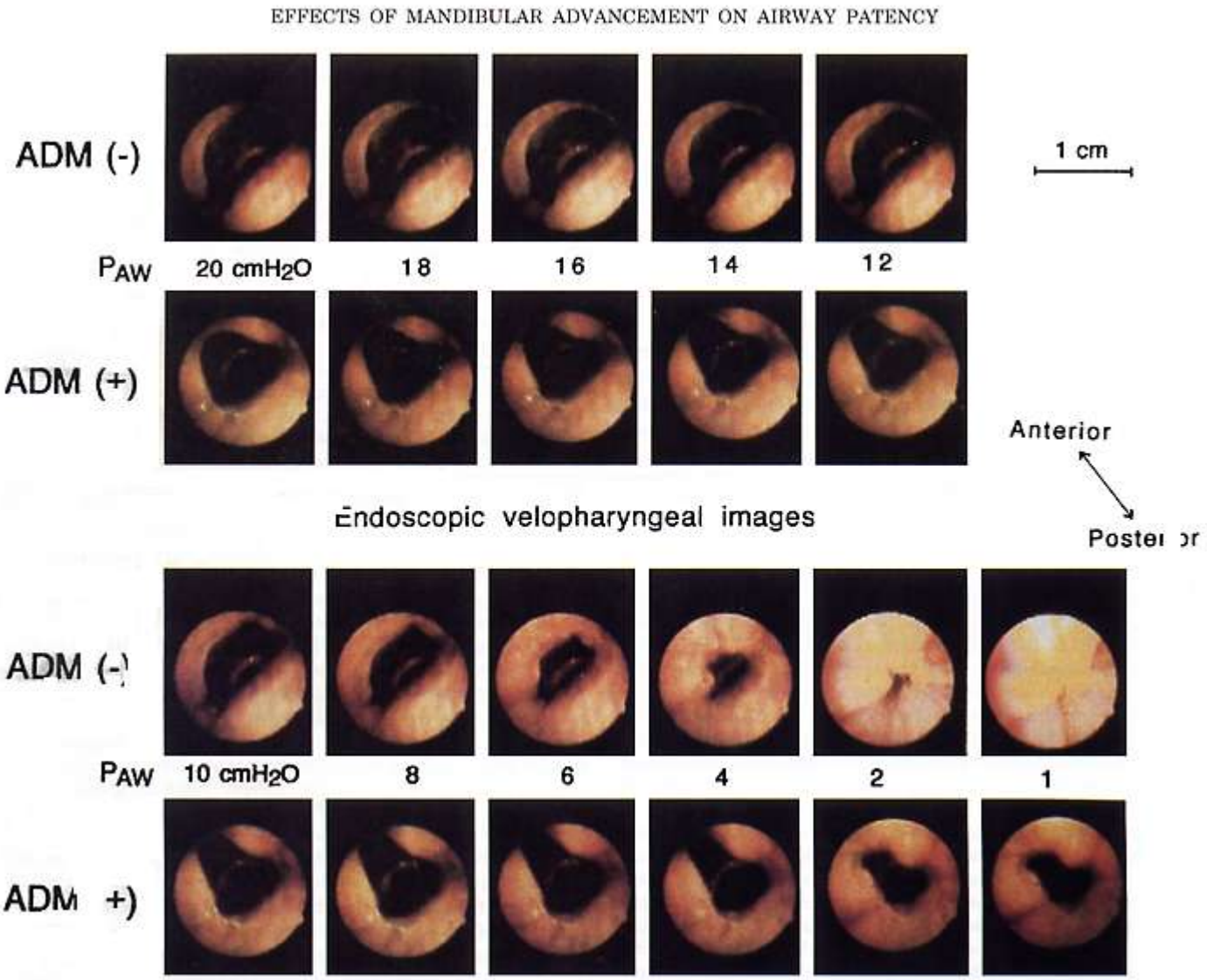


Figure 3 Extra-oral bipolar surface electrode placement configuration for masseter and geniohyoid muscles.



PASSIF

Advancement of the mandible improves velopharyngeal airway patency
Isono et al. *J Appl Physiol.*1995

- **Le présent**
  - *Mécanisme d'action*
  - **Evaluation de l'éfficacité**
    - *Sur la conduite automobile*
    - *Sur les marqueurs de risques cardio-vasculaires*
  - *Contre indications*
  - *Effets secondaires*
  - *Procedure de titration*
  - *Indications*

- *Le futur*

Oral appliances for obstructive sleep apnoea (Review)

Lim J, Lasserson TJ, Fleetham J, Wright J

- **17 Etudes controlées et randomisées (juin 2007)**
  - **6 OA vs control**
  - **9 OA vs nCPAP**
  - **2 OA vs UPPP**
- **846 participants**

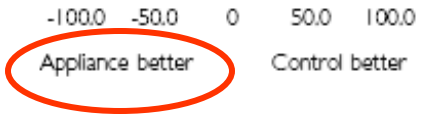
IAH

OAM active > OAM contrôle

Study	Active appliance N	Control appliance N	AHI/hr (SE)	AHI/hr (Fixed) 95% CI	Weight (%)	AHI/hr (Fixed) 95% CI
Durán 2002	38	38	-14.00 (5.44)		15.9	-14.00 [-24.67, -3.33]
Gotsopoulos 2002	73	73	-15.00 (3.71)		34.3	-15.00 [-22.27, -7.73]
Johnston 2002	20	20	-14.82 (5.37)		16.4	-14.82 [-25.34, -4.30]
Mehta 2001	24	24	-16.00 (3.76)		33.4	-16.00 [-23.36, -8.64]
Total (95% CI)					100.0	-15.15 [-19.40, -10.89]

Test for heterogeneity chi-square=0.10 df=3 p=0.99 I^2 =0.0%

Test for overall effect z=6.97 p<0.00001



Micro-éveils

OAM active > OAM contrôle

Analysis 01.06. Comparison 01 Active oral appliance versus control appliance, Outcome 06 Arousals - crossover studies

Review: Oral appliances for obstructive sleep apnoea

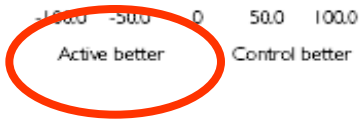
Comparison: 01 Active oral appliance versus control appliance

Outcome: 06 Arousals - crossover studies

Study	Active appliance N	Control appliance N	Arousals/hr (SE)	Arousals/hr (Fixed) 95% CI	Weight (%)	Arousals/hr (Fixed) 95% CI
Gotsopoulos 2002	73	73	-8.00 (2.99)		54.6	-8.00 [-13.86, -2.14]
Mehta 2001	24	24	-14.00 (3.28)		45.4	-14.00 [-20.43, -7.57]
Total (95% CI)					100.0	-10.72 [-15.05, -6.39]

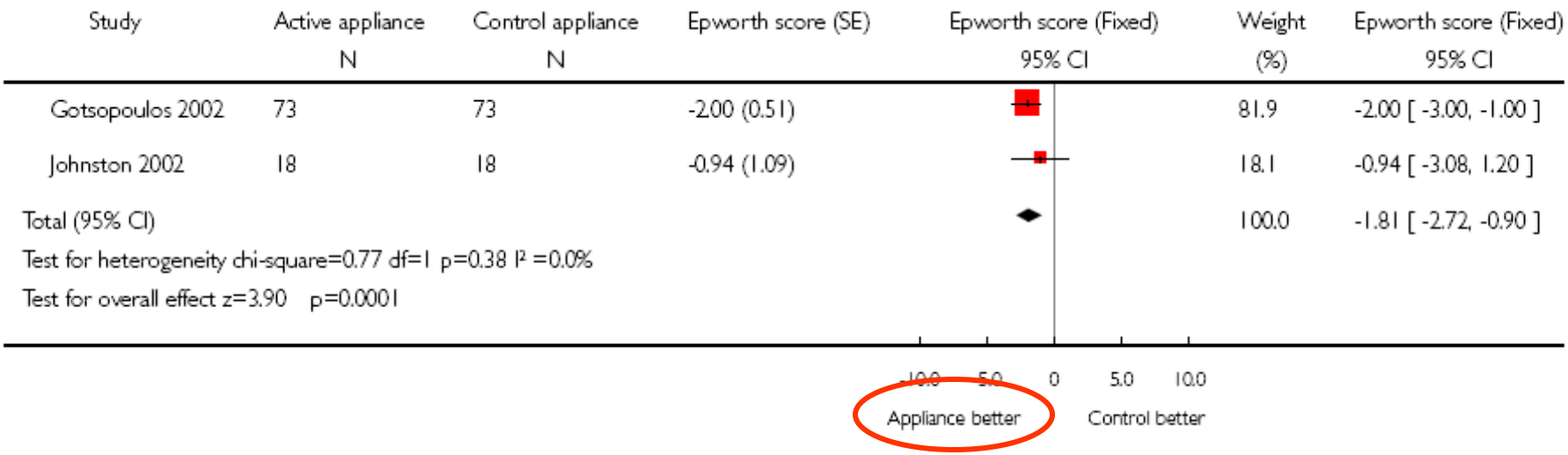
Test for heterogeneity chi-square=1.83 df=1 p=0.18 I^2 =45.3%

Test for overall effect z=4.85 p<0.00001



Epworth

OAM active >contrôle



IAH

OAM active < PPC

Study	OA N	CPAP N	AHI/hr (SE)	AHI/hr (Fixed) 95% CI	Weight (%)	AHI/hr (Fixed) 95% CI
Barnes 2004	80	80	9.20 (1.21)		45.0	9.20 [6.83, 11.57]
Engleman 2002	48	48	7.00 (2.06)		15.5	7.00 [2.96, 11.04]
Ferguson 1996	19	19	14.00 (4.54)		3.2	14.00 [5.10, 22.90]
Ferguson 1997	20	20	10.00 (3.72)		4.7	10.00 [2.71, 17.29]
Olson 2002	24	24	5.10 (2.11)		14.8	5.10 [0.96, 9.24]
Randerath 2002	20	20	10.60 (3.90)		4.3	10.60 [2.96, 18.24]
Tan 2002	21	21	4.90 (2.29)		12.5	4.90 [0.41, 9.39]
Total (95% CI)					100.0	7.97 [6.38, 9.56]

Test for heterogeneity chi-square=7.42 df=6 p=0.28 I^2 =19.1%

Test for overall effect z=9.83 p<0.00001

-100.0 -50.0 0 50.0 100.0

Appliance better CPAP better

Qualité de vie

OAM=PPC

Analysis 02.05. Comparison 02 Oral appliance versus continuous positive airways pressure, Outcome 05 Quality of life score (SAQLI) - first arm data/parallel studies

Review: Oral appliances for obstructive sleep apnoea

Comparison: 02 Oral appliance versus continuous positive airways pressure

Outcome: 05 Quality of life score (SAQLI) - first arm data/parallel studies

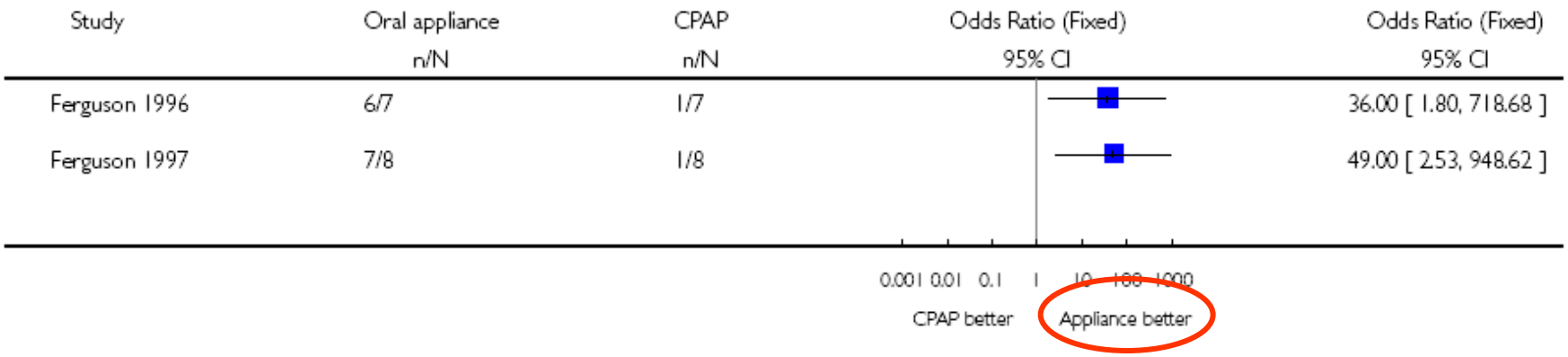
Study	Oral appliance		CPAP		Weighted Mean Difference (Fixed)	Weight	Weighted Mean Difference (Fixed)
	N	Mean(SD)	N	Mean(SD)	95% CI	(%)	95% CI
Fleetham 1998	50	4.70 (1.30)	51	4.80 (1.20)		41.3	-0.10 [-0.59, 0.39]
Olson 2002	11	4.49 (1.32)	12	4.38 (1.45)		7.7	0.11 [-1.02, 1.24]
Lam 2007	34	5.50 (0.58)	34	5.50 (1.17)		51.1	0.00 [-0.44, 0.44]
Total (95% CI)	95		97			100.0	-0.03 [-0.35, 0.28]

Test for heterogeneity chi-square=0.16 df=2 p=0.93 I^2 =0.0%

Test for overall effect z=0.21 p=0.8

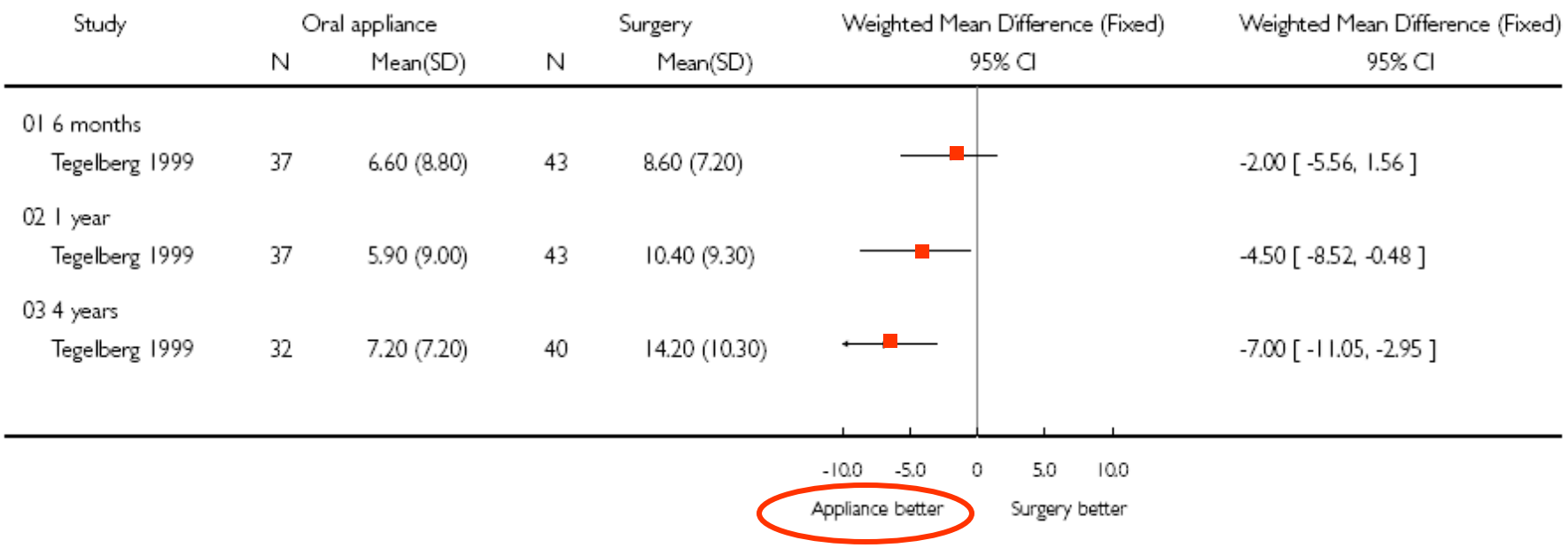
Patients preference OA vs CPAP

A efficacité thérapeutique égale
les patients préfèrent l'OAM/PPC



IAH

OAM > UPPP


Study
Oral appliance
N
Mean(SD)
Surgery
N
Mean(SD)
Weighted Mean Difference (Fixed)
95% CI
Weighted Mean Difference (Fixed)
95% CI
01 6 months
Tegelberg 1999
37
6.60 (8.80)
43
8.60 (7.20)
-2.00 [-5.56, 1.56]
02 1 year
Tegelberg 1999
37
5.90 (9.00)
43
10.40 (9.30)
-4.50 [-8.52, -0.48]
03 4 years
Tegelberg 1999
32
7.20 (7.20)
40
14.20 (10.30)
-7.00 [-11.05, -2.95]
-10.0
-5.0
0
5.0
10.0
Appliance better
Surgery better

Conclusions des auteurs

- Il y a de plus en plus de faits indiquant que l'OA améliore significativement la somnolence subjective et les troubles respiratoires du sommeil lorsqu'elle est comparée à une orthèse placebo

- La CPAP apparaît plus efficace que l'OA pour contrôler les troubles respiratoires du sommeil

- Mais, la différence d'effets sur les symptmoes de la maladie n'est pas significative

- OA est plus efficace que la chirurgie (UPPP)

- **Le présent**
  - *Mécanisme d'action*
  - **Evaluation de l'éfficacité**
    - **Sur la conduite automobile**
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  - *Effets secondaires*
  - *Procedure de titration*
  - *Indications*

- *Le futur*

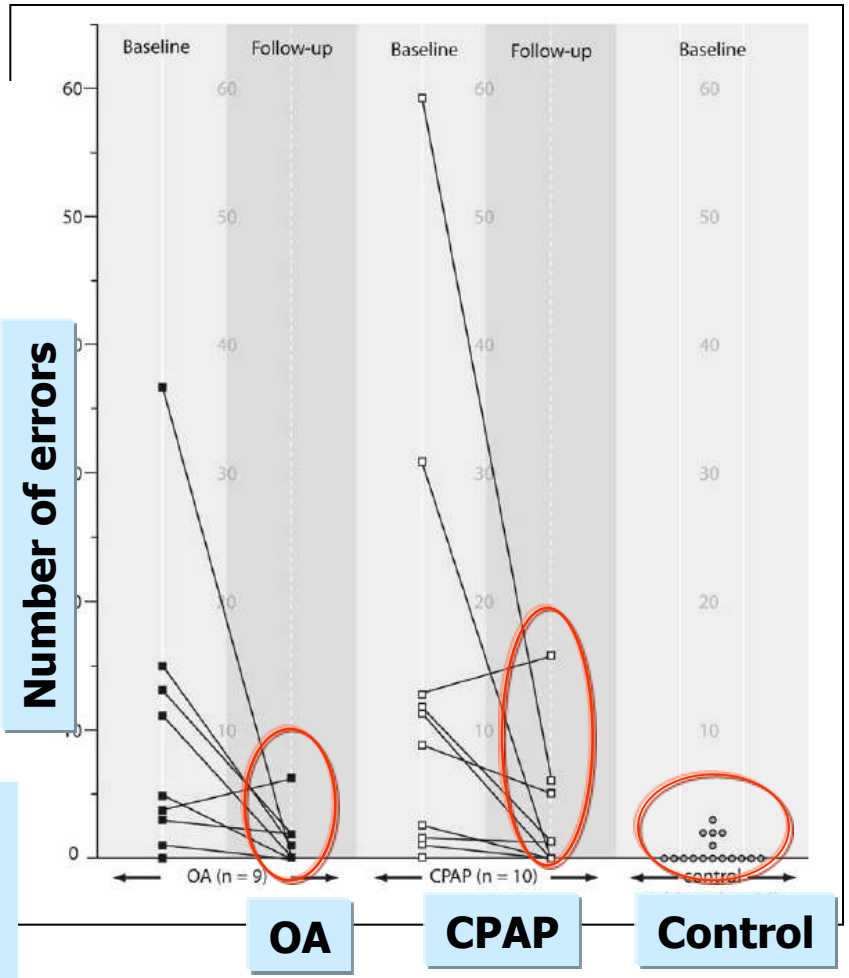
Simulated driving in obstructive sleep apnoea–hypopnoea; effects of oral appliances and continuous positive airway pressure

Aarnoud Hoekema · Boudewijn Stegenga · Marije Bakker · Wiebo H. Brouwer · Lambert G. M. de Bont · Peter J. Wijkstra · Johannes H. van der Hoeven

Sleep Breath (2007) 11:129–138

Table 3 Baseline and follow-up characteristics for OA- and CPAP-treated patients

Variable	OA (n=9)[a]	CPAP (n=10)[a]	Difference[b]
Male/female ratio	7/2	9/1	–
Age (year)	47.6±11.0	49.7±12.4	NS
BMI (kg/m^2)			
Baseline	32.5±6.6	34.2±5.2	NS
Neck circumference (cm)			
Baseline	43.3±3.1	45.0±2.4	NS
Epworth sleepiness scale			
Baseline	11.3±7.9	15.0±5.0	NS
Follow-up review[c]	6.7±6.0	5.5±4.1	NS
Δ	−4.7±7.7	−9.5±6.6*****	NS
Caffeine (units/day)			
Baseline	6.2±3.6	5.1±3.2	NS
Nicotine (units/day)			
Baseline	0.0 (0.0–7.0)	0.0 (0.0–8.5)	NS
Driving experience			
Years of driving experience	28±9	30±12	NS
Annual number of kilometres×10^3	15 (5–23)	18 (10–50)	NS
AHI (events/hour)			
Baseline	47.7 (12.0–92.6)	54.6 (22.8–65.1)	NS
Follow-up review[c]	5.3 (0.2–9.9)	0.0 (0.0–4.8)	NS
Δ	−42.5 (−68.8 to −12.0)**	−54.6 (−64.9 to −16.2)****	NS
Min SaO_2 (%)			
Baseline	78.0 (74.0–80.5)	79.5 (66.8–83.3)	NS
Follow-up review[c]	91.0 (82.0–92.5)	92.0 (88.0–94.0)	NS
Δ	9.0 (6.0–15.0)*	12.5 (9.5–24.3)***	NS
Treatment usage			
Nights per week	6.8±0.4	6.8±0.6	NS



Amélioration des performances de conduite
Pas de difference OA /CPAP

- **Le présent**
  - *Mécanisme d'action*
  - **Evaluation de l'éfficacité**
    - *Sur la conduite automobile*
    - **Sur les marqueurs de risques cardio-vasculaires**
  - *Contre indications*
  - *Effets secondaires*
  - *Procedure de titration*
  - *Indications*

- *Le futur*

Oral Appliance Therapy Reduces Blood Pressure in Obstructive Sleep Apnea: a Randomized, Controlled Trial

SLEEP 2004;27(5):934-41.

Helen Gotsopoulos, BDS, MPH (Hons)[1]; John J. Kelly, MD, PhD[2]; Peter A. Cistulli, MD, PhD[1]

[1]Department of Respiratory & Sleep Medicine; [2]Department of Nephrology, St George Hospital and The University of New South Wales, Sydney Australia

MAS: >50% reduction in AHI

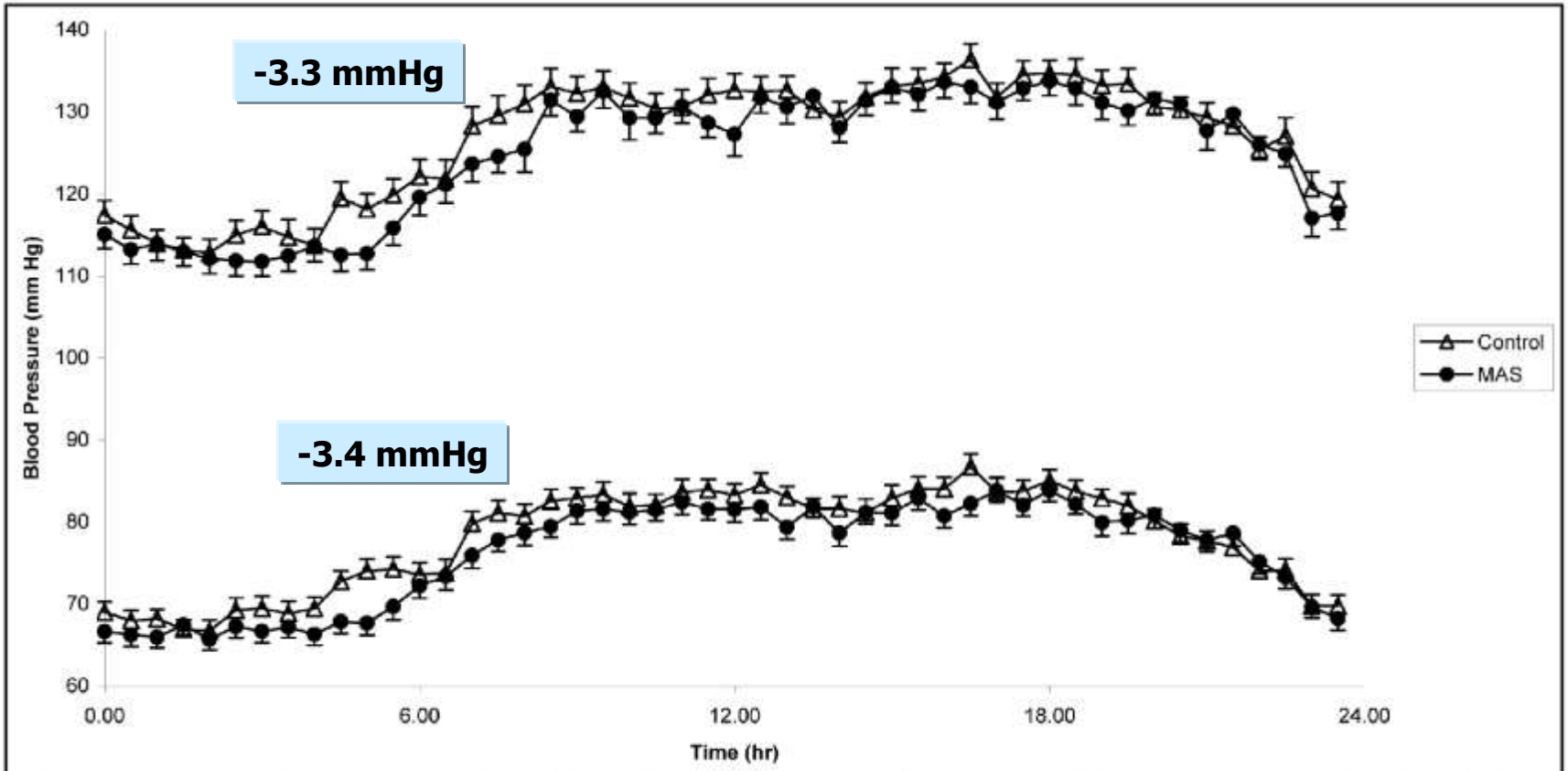


Figure 2—Graph comparing 24-hour systolic and diastolic blood pressure (BP) profiles between mandibular advancement splint and control. Error bars represent SEM for every 30-minute BP reading, with all recordings synchronized from midnight (00:00 hours) to midnight (24:00 hours), (N = 61). Note that the greatest differences in systolic and diastolic BP are evident during the morning period.

Oral Appliance Therapy Reduces Blood Pressure in Obstructive Sleep Apnea: a Randomized, Controlled Trial

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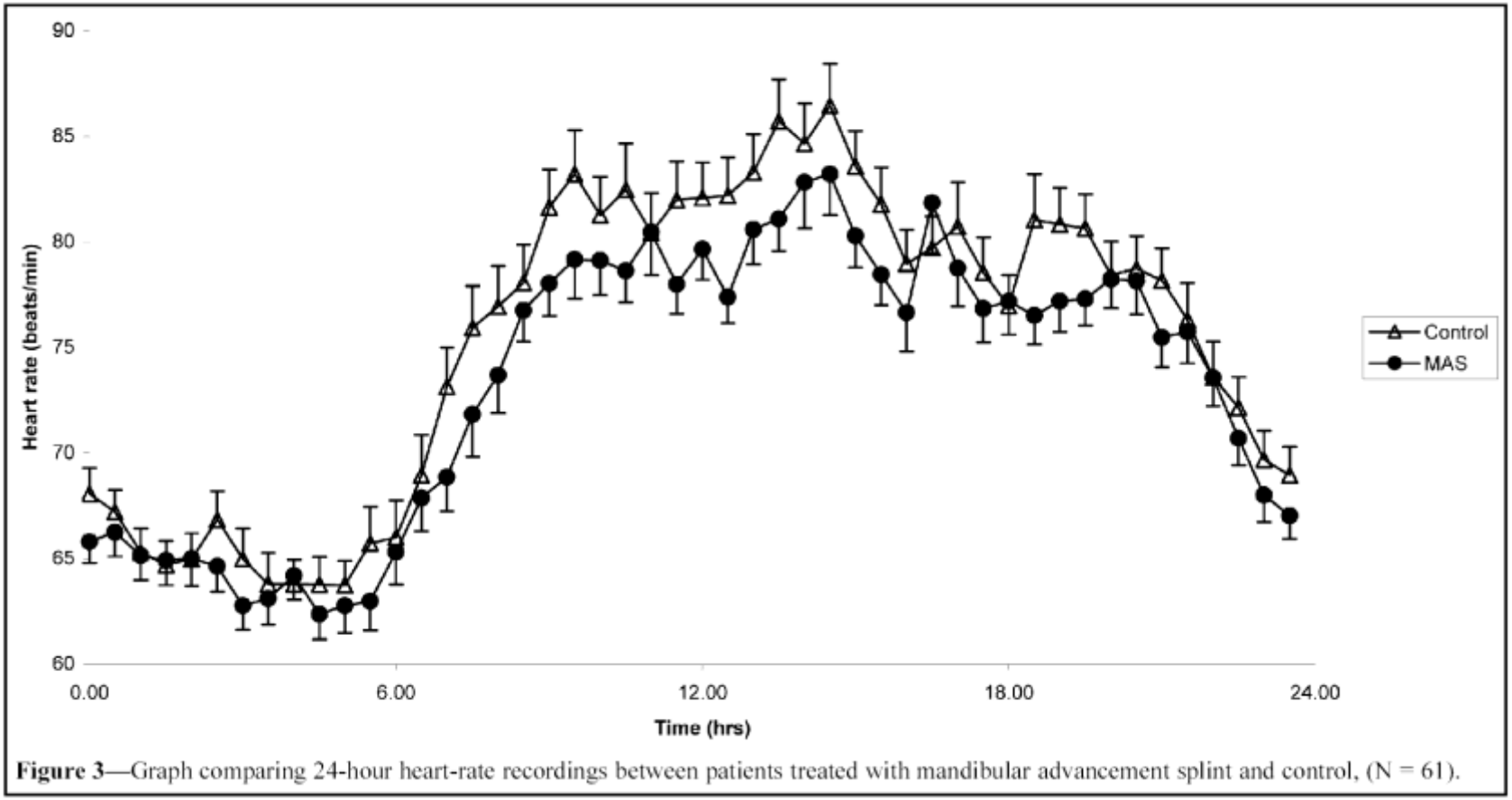


Figure 3—Graph comparing 24-hour heart-rate recordings between patients treated with mandibular advancement splint and control, (N = 61).

Trzepizur et al. Sleep Medicine 2009

Sleep Medicine 10 (2009) 746–752

Contents lists available at ScienceDirect

Sleep Medicine

journal homepage: www.elsevier.com/locate/sleep

Original Article

Microvascular endothelial function in obstructive sleep apnea: Impact of continuous positive airway pressure and mandibular advancement ☆

Wojciech Trzepizur [a,b], Frédéric Gagnadoux [a,c,*], Pierre Abraham [b,c], Pascal Rousseau [b], Nicole Meslier [a,c], Jean-Louis Saumet [b,d], Jean-Louis Racineux [a]

[a] Département de Pneumologie, CHU, 4 rue Larrey, 49033 Angers Cedex, France
[b] Service d'Explorations Fonctionnelles Vasculaires, CHU, 49033 Angers Cedex, France
[c] UMR CNRS 6214-INSERM 771, Faculté de Médecine, 49045 Angers Cedex, France
[d] FRE CNRS 3075, Université de Lyon 1, France

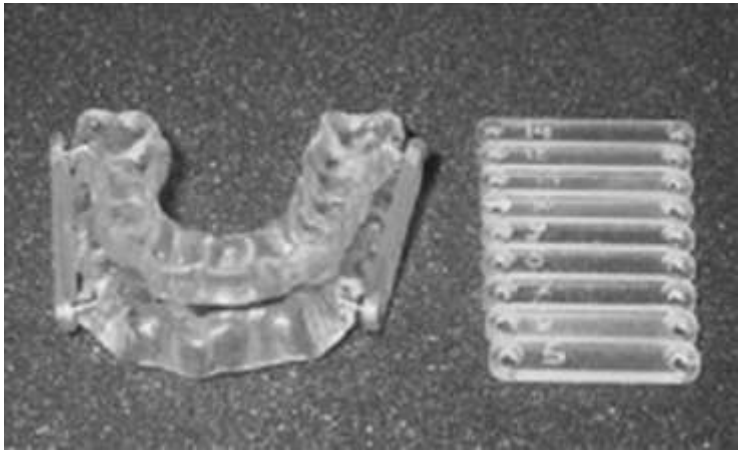
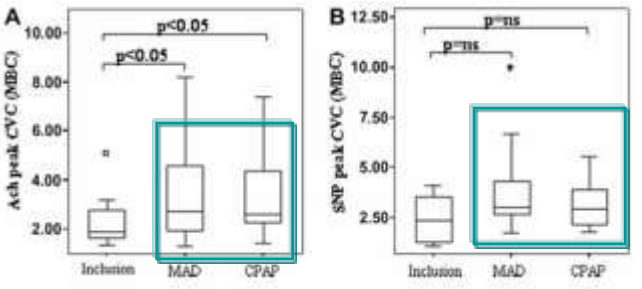


Table 2
Clinical, sleep recording and microcirculation reactivity data in the treated OSAS group at inclusion under CPAP and under MAD (protocol 2)

	Inclusion	CPAP	MAD
ESS	11 [8–14]	10 [5–12]	9 [5–10]
BMI (kg/m²)	29 [27–31]	28 [26–31]	29 [26–32]
Systolic BP (mm Hg)	150 [141–156]	142 [135–155]	140 [126–156]
Diastolic BP (mm Hg)	61 [53–66]	64 [58–68]	63 [59–66]
AHI (n/h)	40 [31–49]#	2 [1–8]*,#	14 [7–18]*,#
Mean SaO_2 (%)	93 [92–94]	95 [94–96]†	94 [93–95]†
3% OD (n)	276 [162–330]	28 [13–84]†	81 [49–126]†
Baseline CVC	0.14 [0.09–0.17]	0.14 [0.11–0.15]	0.09 [0.07–0.12]
Ach-induced peak CVC (MBC)	1.9 [1.7–2.7]	2.6 [2.3–4.4]†	2.7 [1.9–4.3]†
SNP-induced peak CVC (MBC)	2.4 [1.4–3.5]	2.9 [2.3–3.7]	3.0 [2.7–4]

All values expressed as median [interquartile range]; MAD, mandibular advancement device; CPAP, continuous positive airway pressure; ESS, Epworth sleepiness scale; BMI, body mass index; BP, blood pressure; AHI, apnea-hypopnea index; #, n/h of sleep; *, n/h of recording; SaO_2, oxygen saturation; 3% OD, 3% oxygen desaturations; Ach, acetylcholine; SNP, sodium nitroprusside; CVC, maximal cutaneous vascular conductance; MBC, multiple of baseline conductance; †, $p < 0.05$ versus inclusion.



Function endotheliale

Conclusion: Our study shows an impairment of MVEF in OSAS related to OSAS severity. Both CPAP and MAD treatments were associated with an improvement in MVEF that could contribute to improve cardiovascular outcome in OSAS patients.

Amélioration de la fonction endothéliale avec OA et CPAP

Fig. 1. Description of the profile of protocol 2. MAD, mandibular advancement device; CPAP, continuous positive airway pressure.