SUPPLEMENTAL MATERIAL

Intensive weight-loss program

The program consisted of an initial intensive diet phase lasting 12 weeks, followed by a hypocaloric diet phase for the remaining 36 weeks. During the initial phase, patients were placed on a very low calorie diet (600 – 800 Kcal) with low calorie liquid meal replacements (Optifast® [Nestle Health Science]) 3-4/day for 15 days, followed by a 1200 Kcal diet (with one liquid meal replacement/day) accompanied by a program of physical activity. Patients also attended 6 biweekly dietary consultations; the first two of which were in groups and then took place individually and in group alternately. Each session lasted between 60 and 90 minutes and was supervised by the study nutritionist and had the aim of building group support and providing motivation and diet program counseling and education. During the second phase, patients underwent a 1200 – 1800 Kcal Mediterranean diet[32] with a restriction of 500 - 700 Kcal depending on the basal requirements according to the Mifflin St –Jeor equation. Fruit, vegetables, fish and lean meat were strongly recommended following American Society for Nutrition recommendations. Patients were advised to ensure that energy intake of total fat did not exceed 30%. Dietary visits were established monthly for 3 – 6 months and quarterly for 6 – 12 months. To monitor adherence, ketonemia test strips were used during the first three months and a 24 hour food record was kept by a nutritionist. A 3 day self-reported food record and a dietary adherence questionnaire were used during the rest of the study.

Unsupervised physical activity was introduced after 15 days, once the very low caloric diet phase had finished. Patients were advised to perform exercise from 3 to 5 days a week to achieve the goal of 150 minutes per week. It was recommended that every workout session should consist of stretching, 5-10’ of warm up (50-60% of maximum heart rate (HR)), 40-50’ of aerobic exercise (70-80% of maximum HR) and 5-10’ of cool down (50-60% of maximum HR). At each individual visit, a questionnaire was asked about the frequency, duration and intensity of physical exercise. A Rehabilitation Service offered attention to patients who presented musculoskeletal complaints during the course of the exercise program (a VAS pain score ≥ 4).

Table S1 - Health-related quality of life.

	Baseline			3 months			12 months		
	CG	**IG**	**P**	**CG**	**IG**	**P**	**CG**	**IG**	**P**
FOSQ	16.7 (2.7)	15.6 (3.4)	0.336	15.8 (3.6)	17.7 (2.8)	0.096	16.4 (3.3)	17.9 (2.2)	0.124
QSQ	28.4 (23.5;32.2)	29.1 (23.6;31.7)	0.904	31.6 (23.8;33.0)	32.1 (29.8;33.4)	0.482	30.5 (28.2;32.7)	30.8 (27.7;32.6)	0.863
EuroQoL	0.8 (0.7;1.0)	0.9 (0.74;1.0)	0.5	0.8 (0.7;1.0)	1.0 (0.79;1.0)	0.082	0.8 (0.63;0.89)	0.9 (0.8;1.0)	0.130
Well-being EuroQoL scale	6 (5.8;7.6)	7 (5.3;7.5)	0.848	7 (6.1;8.5)	8 (7;9)	0.130	6 (4.8;7.8)	7.8 (6.5;8.5)	0.061

Values are expressed as the mean (standard deviation) or median (Q1;Q3). CG, control group; FOSQ, Functional Outcomes of Sleep Questionnaire; IG, intervention group; QSQ, Quebec Sleep Questionnaire.

Table S2- Anthropometric, respiratory and metabolic variables at 3 and 12 months.

	3 months		12 months	
	Control	**Intervention**	**Control**	**Intervention**
Weight, Kg	103 (9.98)	88.9 (10.7)	106 (10.4)	91.2 (10.8)
BMI, Kg/m^2	34.6 (2.97)	30.9 (2.81)	35.3 (2.98)	31.7 (3.39)
Neck circumference, cm	43.5 (2.76)	40.6 (2.50)	43.9 (3.01)	40.3 (2.56)
Waist / Hip ratio	1.00 (1.00;1.10)	1.00 (0.90;1.00)	1.10 (1.08;1.20)	1.00 (1.00;1.00)
Fat mass, Kg	40.1 (7.61)	29 (9.89)	42.5 (6.45)	25 (8.25)
Fat free mass, Kg	64 (60.5;69.1)	61.5 (59.2;66.6)	66 (59.7;69.2)	62.2 (55.1;66.3)
Body fat, %	38.5 (33;42.2)	29 (25.5;38.5)	38.9 (36;43.5)	27.5 (21;33)
Visceral fat area L3-L4, cm^2	-	-	311 (105)	178 (70.3)
Visceral fat area L4-L5, cm^2	-	-	222 (65.4)	131 (56.5)
Total AHI, events/hour	60 (16.9)	46.1 (27.1)	55.5 (21.1)	50.4 (26.2)
Supine AHI, events/hour	65.5 (28.9)	59.3 (32.1)	70.7 (31.2)	58.8 (29.6)
Non supine AHI, events/hour	46.4 (21.4)	35.7 (33.7)	35 (28)	39.5 (32)
Supine AHI/Non supine AHI	1.2 (0.99;1.38)	1.88 (1.31;3)	1.46 (1.15;3.44)	1.49 (0.91;3.53)
Sleep efficiency, %	79.7 (10.5)	83.1 (5.05)	82.3 (8.02)	85 (5.3)
Supine time, %	46.4 (31.3)	49.2 (24.3)	46.4 (26.2)	52.1 (23.2)
REM sleep time, %	11.1 (5)	15.8 (5.83)	13.8 (4.63)	16.5 (5.78)
Deep sleep time, %	15.3 (8.4)	19.2 (9.61)	17.1 (11.2)	20.7 (8.54)
Superficial sleep time, %	74.2 (11.2)	64.9 (12.4)	69 (13.9)	62.5 (11.8)
Time with SpO_2 < 90%, %	6.5 (2.75;13.2)	3.5 (1;7)	9 (2;13.2)	5 (2.5;12)
Epworth	7.69 (4.41)	5.44 (3.71)	7.12 (5.15)	6.89 (4.98)
CPAP compliance, hours/day	6.01 (1.1)	4.5 (1.48)	6.17 (1.65)	3.95 (1.87)
Systolic blood pressure, mmHg	141 (16.3)	131 (17.7)	135 (12.5)	127 (20.5)
Diastolic blood pressure, mmHg	85.1 (10.3)	83.6 (11.8)	82.9 (11.4)	83.9 (11.5)
Glucose, mmol/L	6 (5.60;6.12)	4.5 (1.48)	6.05 (5.68;6.67)	5.45 (4.9;5.6)
Triglycerides, mmol/L	1.89 (1.03)	1.25 (0.47)	1.74 (0.84)	1.22 (0.42)
Total cholesterol, mmol/L	5.18 (1.03)	4.52 (0.83)	5.06 (1.01)	4.86 (1.06)
LDL-C, mmol/L	3.11 (0.86)	2.75 (0.88)	3.06 (0.87)	3 (1.03)
HDL-C, mmol/L	1.20 (0.41)	1.16 (0.23)	1.24 (0.26)	1.31 (0.28)
CRP, mg/L	1 (1;3.5)	3 (1;4.75)	2 (1;3)	1 (1;3)
HbA1c, %	5.4 (5.38;5.73)	5.4 (5.23;5.57)	5.6 (5.27;5.88)	5.3 (5.2;5.40)

Values are expressed as the mean (standard deviation) or median (Q1; Q3). AHI, apnea-hypopnea index; BMI, body mass index; CPAP, continuous positive airway pressure; CRP, C-reactive protein; HbA1c, glycated hemoglobin; HDL-C, high density lipoprotein cholesterol; LDL-C, low density lipoprotein cholesterol; OSA, obstructive sleep apnea; REM, rapid eye movement; SpO_2, arterial oxygen saturation.