

Remotely Controlled Mandibular Protrusion during Sleep Predicts Therapeutic Success with Oral Appliances in Patients with Obstructive Sleep Apnea

Remmers J, Charkhandeh S, Grosse J, Topor Z, Brant R, Santosham P, Bruehlmann S. SLEEP 2013; 36(10): 1517-25.

OBJECTIVE

- To evaluate the ability of MATRx to predict treatment outcome with oral appliance (OA) therapy and to predict an effective target protrusive position (ETPP)

METHODS

- Consecutive patients (n = 67) were recruited from a sleep center or a dental practice using broad inclusion criteria (age 21–80 years; AHI > 10/h⁻¹; BMI < 40 kg/m²)
- Therapeutic outcome with an OA was predicted following a titration study in the PSG lab using MATRx and prospectively established predictive rules
- An ETPP was also prospectively determined for participants predicted to be therapeutically successful with OA therapy
- All participants were blindly treated with an OA, at either the predicted ETPP or a sham position, and therapeutic outcome was compared against prediction

RESULTS

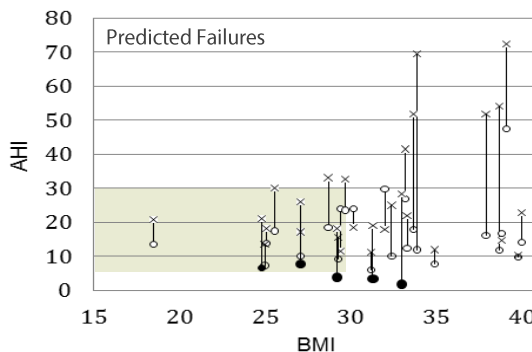
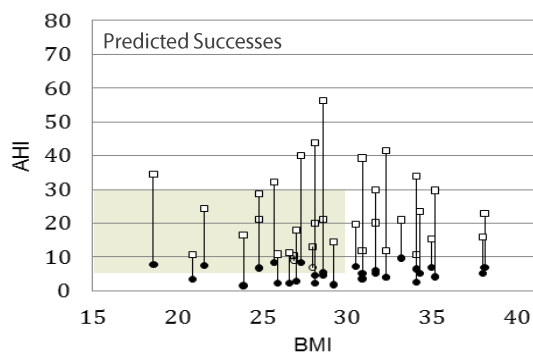
- At the final protrusive position, standard predictive parameters showed statistically significant predictive accuracy (p < 0.05)
- The predicted ETPP provided an efficacious protrusive position in 93% of participants correctly predicted to be therapeutically successful with MRA therapy (p < 0.05)

	Predicted Success	Predicted Failure	
Therapeutic Success	30	5	Sensitivity = 86% PPV = 94%
Therapeutic Failure	2	24	Specificity = 92% NPV = 83%



MATRx mandibular positioner and disposable dental trays

- Among those predicted to be successful with OA therapy, 62.5% had BMI and/or baseline AHI values that exceeded those usually recommended for selecting candidates for OA therapy (indicated by shaded area in figure below), and all of these were therapeutically successful
- Similarly, 24.1 % of participants in the predicted failure group lying within the recommended guidelines were not therapeutically successfully



X, □ Baseline AHI
● Therapeutic Success
○ Therapeutic Failure

CONCLUSIONS

- MATRx predicted OA outcome with significant accuracy, particularly with regard to accurately predicting therapeutic success
- As well, among the participants predicted to be therapeutically successful with OA therapy, the ETPP provided efficacious mandibular protrusion in almost all subjects