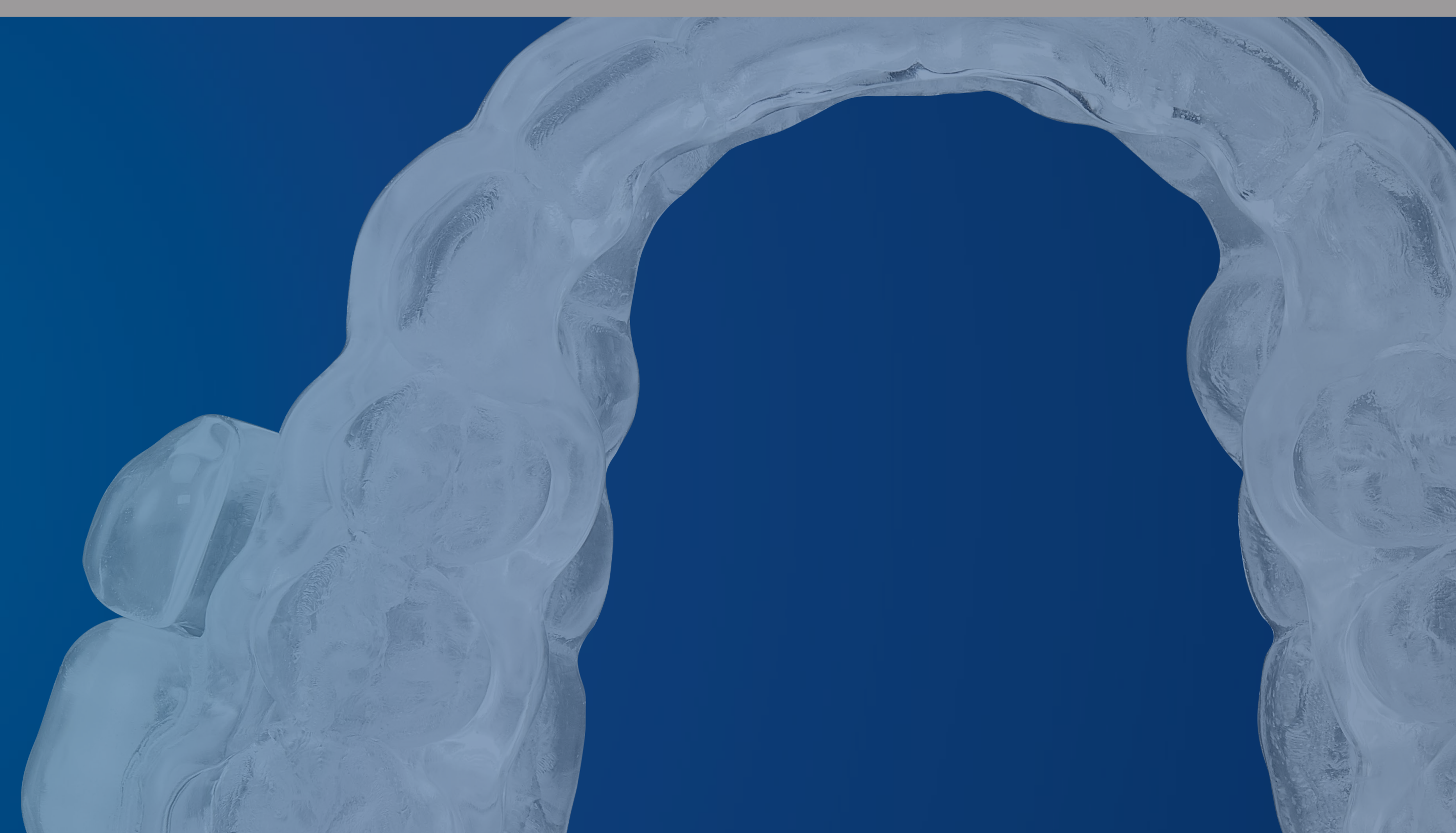




PRECISION ORAL APPLIANCE THERAPY FOR THE TREATMENT OF SEVERE OSA

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Introduction

Mandibular advancing oral appliances (OAs) are commonly used to treat mild and moderate obstructive sleep apnea (OSA) but are less accepted for severe OSA. However, the preference for OAT over CPAP and relative lack of other non-surgical treatment options highlights the need for acceptance of OAT for all severities of OSA.

Methods

Data from two prospective studies conducted for the purpose of validating a test that predicted response to OAT were evaluated. Study participants (n = 109) received a precision OA (ProSomnus Sleep Technologies). Once participants were habituated to OAT, a 2-night type 3 home sleep apnea test was conducted to assess treatment efficacy. The mandible was advanced as necessary to lower the apnea-hypopnea index (AHI).

Results

Table 1. Participant Baseline Data

Gender (M/F; n)	80/29
Age (years)	50.2 ± 9.4 (26-70)
BMI (kg/m ²)	31.9 ± 5.0 (19.8-45.9)
Baseline AHI (h ⁻¹)	29.4 ± 19.4 (7.8-101.8)
SpO ₂ (%)	92.1 ± 1.5 (87.1-94.7)
OSA severity (mild/moderate/severe; n)	29/39/41
Epworth Sleepiness Scale	8.0 (0-23)

Data for gender and OSA severity are presented as the number of participants in each category. Data for Epworth Sleepiness Scale are presented as the median (range). The remaining data are presented as mean ± standard deviation (range). AHI: apnea-hypopnea index; BMI: body mass index; SpO₂: mean oxygen saturation during sleep. Note: the normal value for SpO₂ in Calgary, AB is 93%.

Figure 1. Percentage of Study Population with Reduction in AHI ≥ 50% with precision OAT

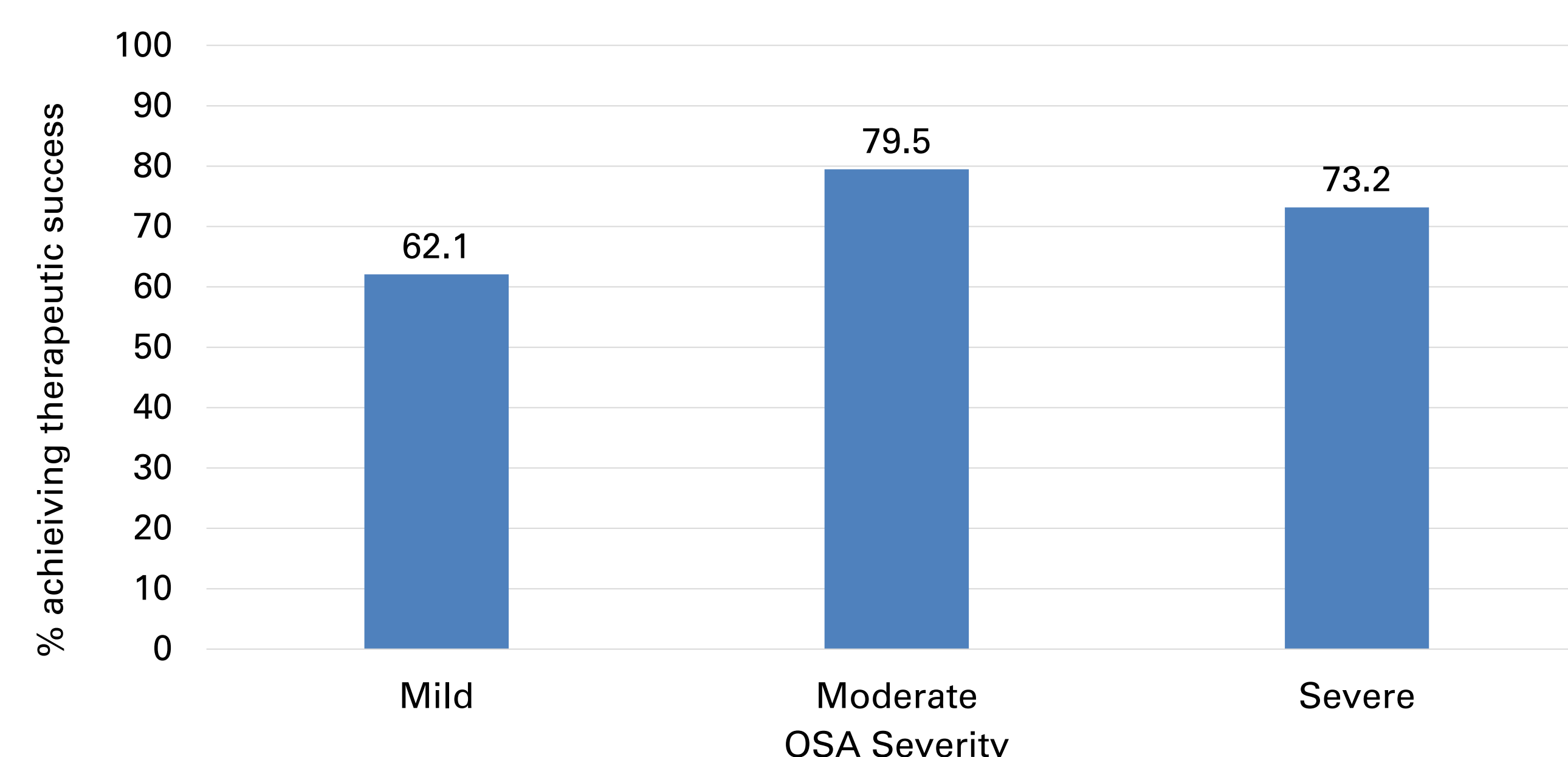


Figure 2. Percentage of moderate and severe participants achieving AHI < 15 h⁻¹ with precision OAT

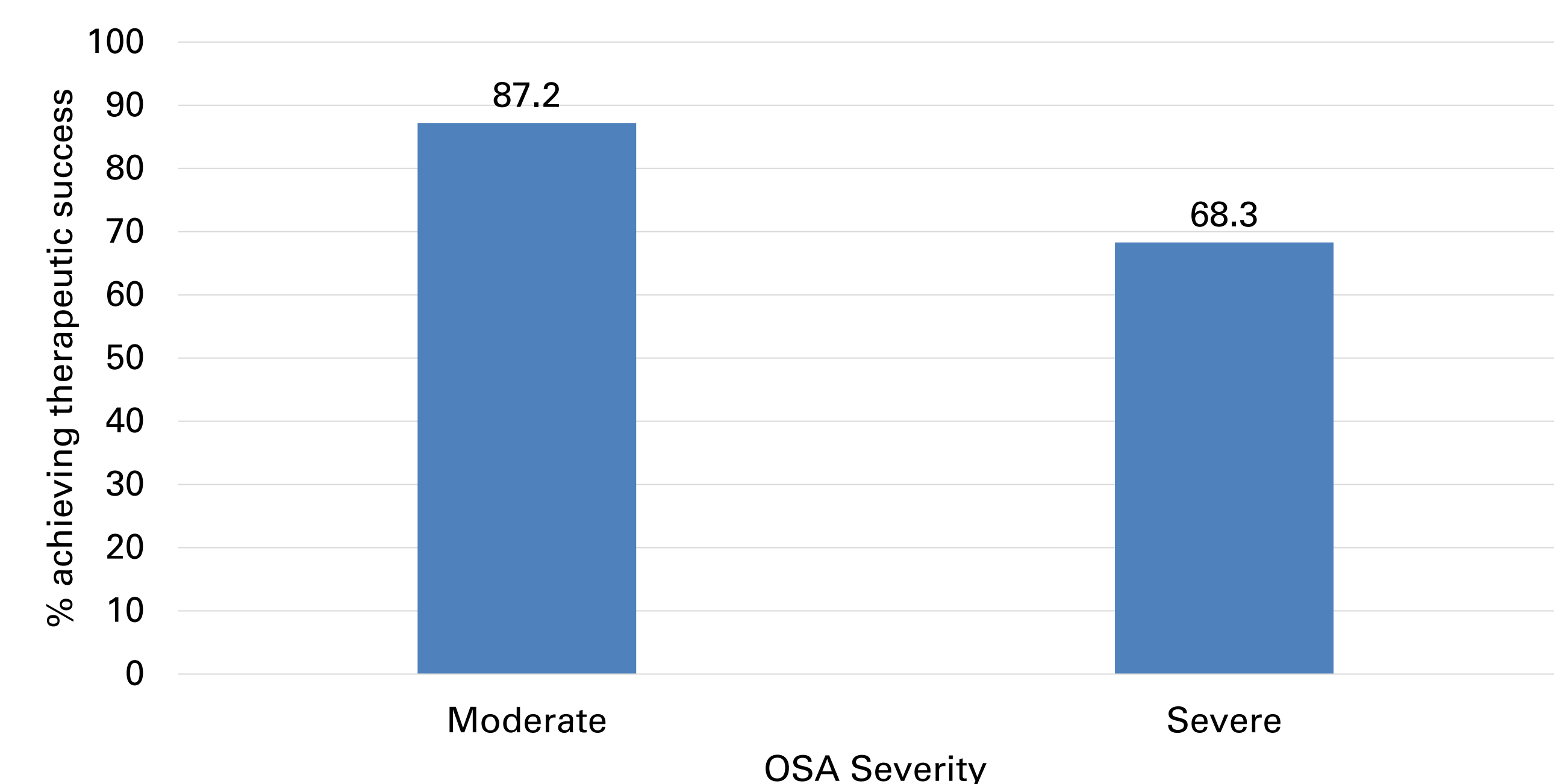


Table 2. Mandibular protrusion required to achieve AHI < 15 h⁻¹ in moderate and severe participants

	Mean (%)	SD (%)	Range (%)
Moderate	81.2	17.4	34.6-100
Severe	86.7	15.3	54.8-100

Figure 3. Time spent at < 90% saturation (T90) at outcome

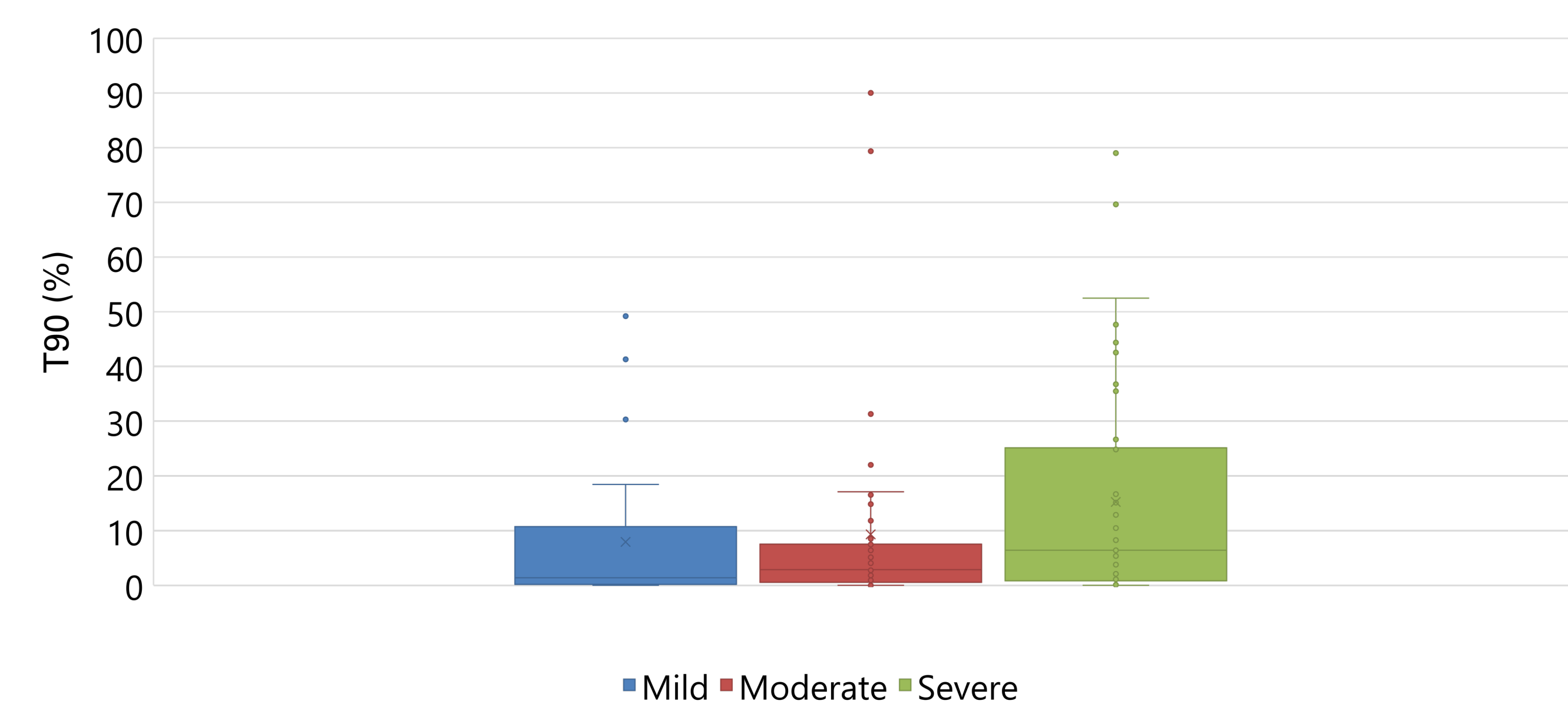
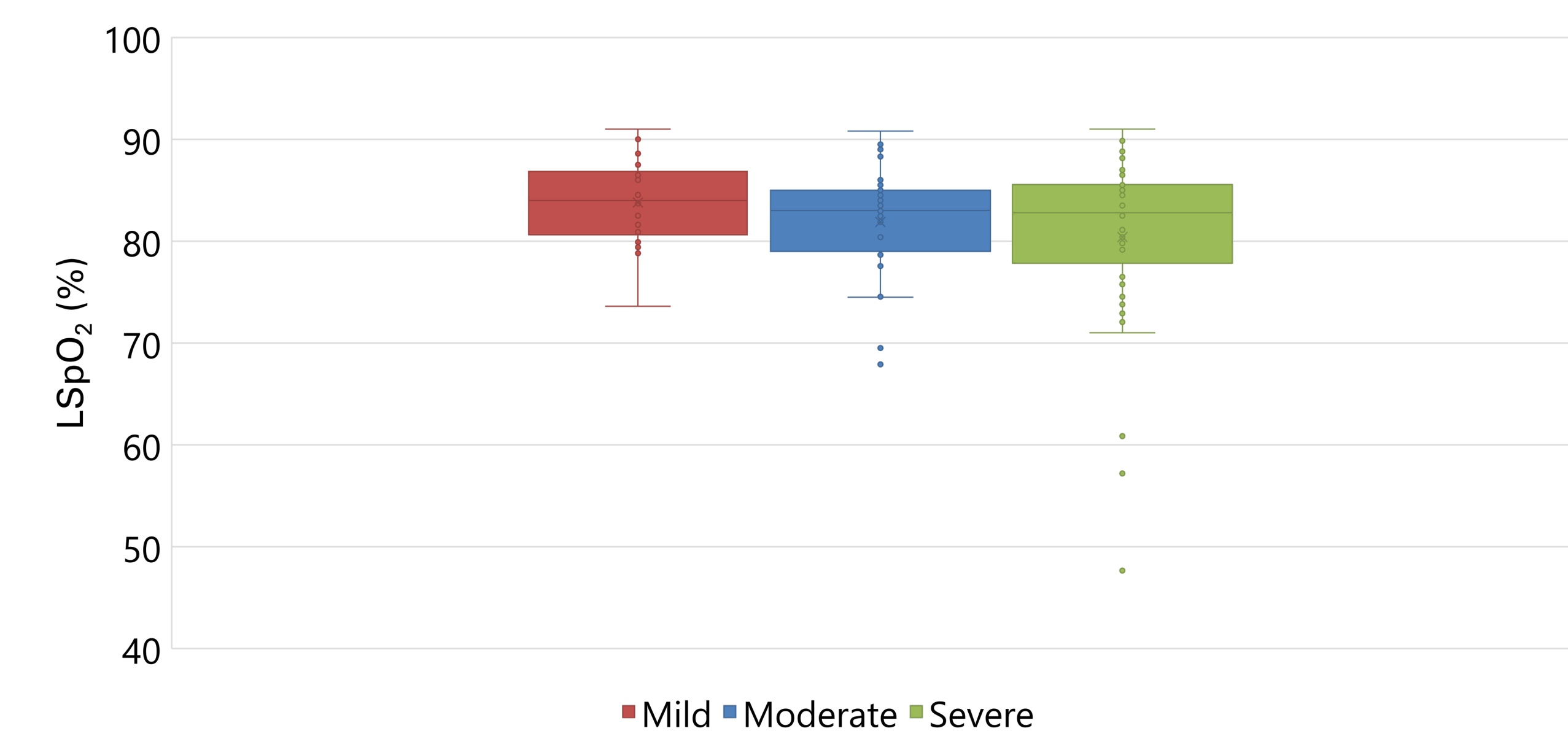


Figure 4. Lowest SpO₂ at outcome



Of note, the time spent at < 90% saturation (T90) and the lowest SpO₂ value (LSpO₂) did not differ significantly among OSA severities at outcome (p = 0.184 for T90; p = 0.311 for LSpO₂).

Conclusions

The OAs used in the studies provided efficacious treatment for most individuals with severe OSA. The lack of difference in T90 and LSpO₂ among severities could indicate that disease burden might be alleviated even when event-based indices suggest only moderate improvement. The results indicate that OAT could be a suitable alternative to CPAP for severe OSA and that oxygen-based parameters might provide valuable insight into therapeutic success.