

## SUMMARY

**PhD candidate:** Alberto Alvarez Suárez

**Doctoral Thesis Title:** TRIDIMENSIONAL ESTIMATION OF THE UPPER AIRWAY, BY MEANS OF AN ORIENTABLE AND ADJUSTABLE MECHANISM, IN THE TREATMENT OF SLEEP APNOEA WITH MANDIBULAR ADVANCEMENT DEVICES

This thesis was inspired by a need detected in patients suffering from Sleep Apnoea-Hypopnoea Syndrome and/or chronic snoring. Subsequent to this realisation, a revision of the state of the art was carried out and two prototypes were designed and developed by means of an experimental methodological approach.

- Mandibular Advancement Device (MAD).
- Adjustable Simulating Mechanism.

The former allows mandibular advancement in patients with Sleep Apnoea-Hypopnoea Syndrome and/or chronic snoring; the latter prototype enables the accurate measurement of the MAD's advancement adjustment.

MAD validation was structurally and clinically accomplished:

3. Structurally, by applying the finite element model, which evidenced aptness from a structural point of view, or resistance, as required by the MAD load.
4. Clinically, by carrying out polysomnographic tests as well as volumetric and statistical analyses, which registered significant results ( $p < 0,05$ ) in patients using MADs.