Objectives: Research on Mandibular Cervical Headgear (MCH) on skeletal Class III malocclusions has been scarce. The aim of this study was to evaluate stresses and strains on the mandible and TMJs with MCH by means of FEA. Methods: A CT scan of a 11-year-old boy lower facial third that had been indicated to wear MCH was obtained. Images taken every millimeter were processed with Rapid Form®, individualized and exported to GID 8.0® to obtain volumes. According to the literature, Isotropic mechanical properties were assigned to cancellous bone, articular disc, temporal bone and dentin. Mandibular cortical bone was modeled orthotropically and divided into four areas. With ANSYS 10®, the model was made of 10 nodes solid tetrahedral elements. For the PDL and 1st molar band, shell type elements were used. Mathematical validation was carried out using the "H" method. Insertion areas of Masseter, Medial and Lateral Pterygoids and Temporal muscles were restricted in all degrees of freedom and allowed to prevent displacement on it's action line. Mechanical static analysis was performed to apply a 8 oz force to the band. Results: A maximum compressive stress of 10grf/mm2 and 7.6gmf/mm2-0.076MPa on the molar and alveolus respectively was observed. Compressive stresses were observed on the lingual aspect of the mandible (1gr/mm2-0.01MPa) with a tendency to twist inward at the dental arch. The chin showed a 0.14 mm lingual displacement and the gonial and condilar neck angles were diminished and the gonial angles were moved laterally. The condyle and the glenoid fossa were compressed, but less on the last. Conclusions: The mandible was compressed with a tendency to be bent up, back and outward. Stress dissipation was about 24% and 40% for PDL and articular disc respectively.