**FINITE ELEMENT ANALYSIS OF A BICYCLE WHEEL:**

**THE EFFECTS OF THE NUMBER OF SPOKES ON THE RADIAL S**

**TIFFNESS**

 **ABSTRACT**

The purpose of this investigation is to evaluate the effects that the number of spokes have on the radial stiffness of a bicycle wheel. For this investigation, three bicycle wheels with 28, 32, and 36 radial spokes were modeled as nonlinear static stress models using a finite element analysis (FEA) software. These wheels were subjected to a radial load only. The stresses, strain and displacements of each model were compared to determine the relationship between the number of spokes and the radial stiffness of the wheel. Based on the FEA results, the radial stiffness increased with increasing number of spokes, as expected. The stresses and forces in the spokes and the displacements of the bottom spoke decreased as more spokes were added to the wheel. Additionally, the pretension lower spokes had reduced intension while the rest of the spokes slightly increased in tension.