3D MODELING OF A LUMBAR SPINE UNIT

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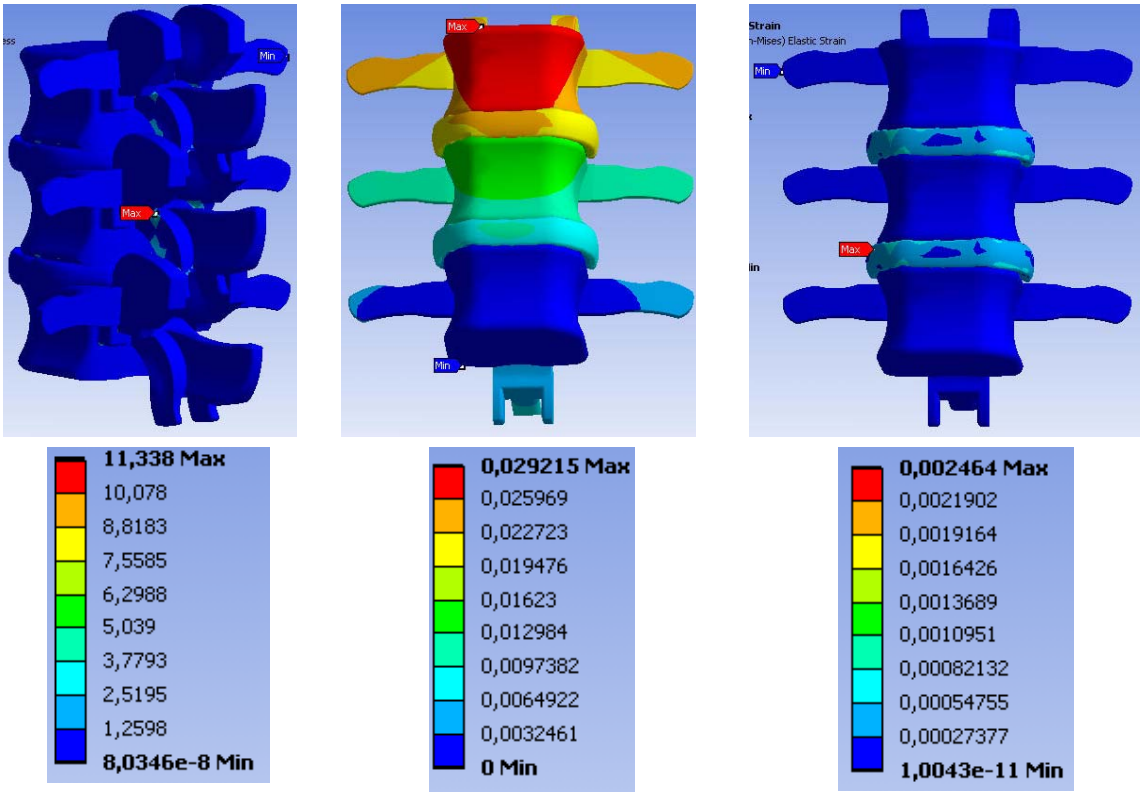
ABSTRACT: The paper presents a study of modeling and analysis of a human lumbar spine unit. The 3D anatomical model consists of three vertebra and two intervertebral discs, next following to endure tensions through a finite element analysis. The modeling of the lumbar unit is performed in several phases, from a rough shaped design to a proper functional model. The working environments used are Solid Works 2007 for modeling and AnSYS 11.0 for FEM analysis.



Equivalent stress [MPa] *Total deformation [mm]* *Equivalent elastic strain [mm/mm]*

Figure 9 - Results

4. REFERENCES

[1] http://blogs.healthcare.com/headsuponyourbody/2008/06/23/back-pain-statistics/
[2] http://www.back.com/anatomy-lumbar.html
[3] Steven M. Kurtz, Avram A. Edidin - Spine Technology Handbook, Copyright Elsevier 2006
[4] SolidWorks 2007 Help Files www.solidworks.com
[5] Shiu-Bii Lien, Nien-Hsien Liou, Shing-Sheng Wu - Analysis of anatomic morphometry of the pedicles and the safe zone for through-pedicle procedures in the thoracic and lumbar spine, 19 December 2006, Springer-Verlag 2006
[6] Monica-Iliuta Creţan, Mihai Gafitanu, Florin Munteanu - The geometrical parameters of the human intervertebral disc measured using ct and autocad