

## CURRICULUM VITAE

Name: Seyyed Hamed Hosseini Nasab

Address: (Study)

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### Education:

**1999-2002** Sharif University of Technology, Tehran, Iran. MSc in Biomechanical Engineering

*Total Average:* 17.31 of 20.00 (3.46 of 4.00)

*MSc Thesis:* Stress Analysis of Spinal Implants Screws under Different Loading Conditions, using Finite Element Method.

*Advisors:* F. Farahmand, M. H. Karegarnovin

*Abstract:* In this study some 3D nonlinear finite element models of the intact ligamentous lumbar units were constructed. The analysis accounts for both material and geometric nonlinearities. Two commercial types of pedicle screw systems were used to simulate the stabilizing process. Load-displacement behavior of the stabilized models and stress distribution in various spinal structures were compared with those of intact models. In addition, a parametric stabilized model was developed to evaluate the effects of variation in material properties of the graft and cancellous bone, pedicle morphometry and position of the graft on the results. Stress distribution in the implants was also investigated as a function of variation in insertion technique to determine how the risk of pedicle screw breakage is affected by changes in screw insertion depth, height and angle within the pedicle. Results of parametric model indicated that pedicle morphometry has a minor effect on the stresses in the pedicle screw while these stresses can strongly affected by surgical technique.

**1995-1999** Ferdowsi University, Mashad, Iran. BS in Mechanical Engineering

*Total Average:* 16.22 of 20.00 (3.24 of 4.00)

*BS Thesis:* Mechanical Design of an Apparatus for the Testing of Automobile Brake System.

*Advisor:* A. Jamialahmadi

### Language Abilities:

English (good), Deutsch (fair), Persian (first language).

### **Publications in English:**

- 1- Farahmand, F., Hosseini Nasab, H., Karegarnovin, M. H., A Finite Element Study of the L3-L5 Lumbar Unit Subjected to Physiological Load Cases, Proceeding of ESDA 2002, Turkey.
- 2- Farahmand, F., Hosseini Nasab, A Finite Element Study of The Effects of Nucleotomy, Proceeding of Biomed 2002, Malaysia.
- 3- Hosseini Nasab, H., Farahmand, F., A Finite Element Study of the Effects of Initial Intradiscal Pressure on Lumbar Spine Safety, EMBEC 2002, Austria (Abstract accepted).

### **Publications in Persian:**

- 1- Hosseini Nasab, H., Farahmand, F., Karegarnovin, M. H., Investigation of the relation between mechanical parameters and the low back pain by finite element modeling of the L3-L5 lumbar unit, Proceeding of ISME 2002, Iran.
- 2- Parnianpour, M., Farahmand, F., Hosseini Nasab, H., Determination of the safe region of the human activities using optimization method, Journal of research activities of the mechanical Eng. Department of Sharif University of Technology, 2002.
- 3- Hosseini Nasab, H., Kasiri, S., Investigation of the remodeling process in the stabilized spine, Proceeding of the 3<sup>rd</sup> Student Conference of Iranian Biomedical Eng. 2002.
- 4- Hosseini Nasab, H., Kasiri, S., Belashi, A., A parametric study of the intervertebral disc using finite element method, Proceeding of SCISME 2002.
- 5- Kasiri, S., Belashi, A., Hosseini Nasab, H., Investigation of the effects of damage and internal remodeling on the femur bone under fatigue loads using strain energy density method, Proceeding of SCISME 2002.
- 6- Belashi, A., Hosseini Nasab, H., Kasiri, S., Investigation of the effects of the geometry of the patellofemoral joint on the cinematic of this joint, Proceeding of SCISME 2002.
- 7- Parnianpour, M., Farahmand, F., Hosseini Nasab, H., Investigation of the effects of changes in PCSA and strength of lumbar muscles on the safe region of physical

activities, Proceeding of Iranian National Conference of Ergonomics in Industry and Manufacturing (IES), Iran, 2002.

### **Research Activities:**

- 1- Research Assistant in the project of “Determination of the Safe Region of the Human Activities”, Sharif University of Technology, 2001-2002.
- 2- Research Assistant in the project of “Development of design and manufacturing technology of the custom made prosthesis, Ministry of Science, Research and Technology, 2002-2003.
- 3- Research Assistant in the project of “Development of a system for analysis of the kinematics and dynamics of the human movements, Sharif University of Technology, 1998-1999.
- 4- Research Assistant in the project of “Design and manufacturing of the body joints movement simulator, Sharif University of Technology, 2001-2002.
- 5- Research Assistant in the major project of “ Modification and development of surgical instruments, Sharif University of Technology, 2001-2002.
- 6- Research Assistant in the project of “Investigation of the effective factors on the performance of ultrasonic flowmeters”, Individual research project, Sharif University, 1998-1999.

### **Experiences:**

- 1- Teaching Assistant in the course of “Dynamics of the Machines”, Ferdowsi University, 1997-1999.

### **Study Fields:**

- |   |                              |
|---|------------------------------|
| 1- Finite Element Method                          | 2- Spine Biomechanics        |
| 3- Biomechanics of Orthopaedics and Bone Injuries | 4- Occupational Biomechanics |
| 5- Sport Biomechanics                             | 6- Nanotechnology            |
| 7- Damage and Remodeling                          | 8- Design Optimization       |

## **Software Abilities:**

- 1- ANSYS          2- GAMS          3- Solid Works          4- Working Model 4D  
5- Matlab          6- Fortran Programming

## **Awards:**

- 1- *Best-distinguished top student of the all universities in Iran, 2002.***
- 2- Top student of the Mechanical Engineering Department, Sharif University of Technology, Winter Semester, 1999.
- 3- Top student of the Mechanical Engineering Department, Sharif University of Technology, Winter Semester, 2000.
- 4- Top student of the Mechanical Engineering Department, Ferdowsi University, Spring Semester, 1996.
- 5- Top student of the Mechanical Engineering Department, Ferdowsi University, Winter Semester, 1998.
- 6- Top student of the Mechanical Engineering Department, Ferdowsi University, Spring Semester, 1998.