



Curriculum Vitae

Dr. J. Marcus Hollis, PhD, PE

Profession: Dr. Hollis is a bio-mechanical engineer specializing in biomechanics, injury causation, and seat belt effectiveness. He analyzes how the human body reacts to forces generated from an accident in order to determine if the injuries are consistent with the accident event. Dr. Hollis utilizes a robust 3-dimensional simulation program to determine how an occupant moves in a particular collision, what the occupant collides with, the forces that are generated, and whether seat belt use would have prevented the reported injuries.

Licensure: Professional Engineer, State of Florida, License Number 63326
Professional Engineer, State of Alabama, License Number 15069

Education: *University of California, San Diego, CA*
1988 – Doctor of Philosophy in Bioengineering
University of Alabama at Birmingham, Birmingham, AL
1983 – Master of Science in Biomedical Engineering
Clemson University, Clemson, SC
1979 – Bachelor of Science in Civil Engineering

Experience: *Bloomberg Consulting, Inc. - Pensacola, FL*
2005 to present - Biomechanics and Injury Causation Consultant

University of South Alabama - Mobile, AL
1995 to present – Adjunct Associate Professor, Orthopedic Surgery
1996 to 2006 – Adjunct Associate Professor, Mechanical Engineering

University of Arkansas for Medical Sciences – Little Rock, AR
1988 to 1995 – Assistant Professor, Orthopedic Surgery

University of California, San Diego – La Jolla, CA
1984 to 1988 – Research Associate, Orthopedic Biomechanics



Expertise. Precision. Innovation.

Current Research:

- Determination of Cervical Spine Substructure Mechanical Properties (Injury Threshold Related)

Awards:

- The American Orthopedic Society for Sports Medicine: Excellence in Research as Applied to Sports Medicine, Clinical Science (Co-Author), 1990
- The American Orthopedic Society for Sports Medicine: Excellence in Basic Science Research, Sports Science (Co-Author), 1986
- Anterior Cruciate Ligament (ACL) Study Group: Effects of ACL Injury and Reconstruction of Miniscal Strain

Patents:

- Patent Number 6652260 – Composite Allograft Press
- Patent Number 6293971 – Composite Allograft, Press & Methods
- Patent Number 6081741 – Infrared Surgical Site Locating Device & Methods
- Patent Number 5981828 – Composite Allograft, Press, and Methods
- Patent Number 5824078 – Composite Allograft, Press, and Methods
- Patent Number 5402800 – Ankle Laxity Measurement System
- Pending - Infrared Surgical Site Locating Device with Laser
- Application in Progress – Minimally Invasive Method for Soft Tissue Suturing

Professional Associations:

- Society of Automotive Engineers
- Orthopedic Research Society
- American Society of Mechanical Engineers
- ASTM International, formerly American Society for Testing and Materials

Training:

- Ongoing Training – Dr. Hollis has analyzed hundreds of SAE technical papers, crash tests, and other leading edge research in the fields of medicine, engineering, and accident reconstruction.
- SAE STAPP Crash Conference
- SAE Airbag Conference
- ASME Bioengineering Conferences
- Orthopedic Research Conferences



Expertise. Precision. Innovation.

Recent Presentations:

- ROBOTIC BIOMECHANICAL TESTING OF CERVICAL SPINE STRUCTURES, J.M. **Hollis** and S. Kolakanuru 25th Southern Biomedical Engineering Conference, Miami, FL, 2009.
- COMPARISON OF CERVICAL SPINE FIXATION DEVICES, **J. Marcus Hollis**, Viorel Raducan, Proceedings of BioMed2009, 44th Frontiers in Biomedical Devices Conference, June 8-9, 2009, Irvine, California, USA
- Current Technology in Spine and Spinal implant Evaluation: Robotic Testing, **J Marcus Hollis**, Proceedings of BioMed2009, 44th Frontiers in Biomedical Devices Conference, June 8-9, 2009, Irvine, California, USA

Papers:

- *Cyclic and Mechanical Testing of Instrumented Swine Spines*, Masters Thesis, University of Alabama at Birmingham, Birmingham, AL, 1983. Thesis Advisor: Professor Jack E. Lemons
- *Development and Application of a Method for Determining the In Situ Forces in Anterior Cruciate Ligament Fiber Bundles*, Ph.D. Dissertation, University of California, San Diego, CA, 1988. Dissertation Advisor: Professor Savio L.Y. Woo
- Nasca RJ, **Hollis JM**, Lemons JE, Cool TA: Cyclic Axial Loading of Spinal Implants. *Spine* 10(9): 792-798 (1985)
- Inoue M, McGurk-Burleson E, **Hollis JM**, Woo, SL-Y: Treatment of Medial Collateral Ligament Injury: I. The Importance of Anterior Cruciate Ligament on the Varus-Valgus Knee Laxity. The 1986 American Orthopedic Society for Sports Medicine Excellence in Research Award (Sports Science). *Am J Sports Med* 15(1): 15-21 (1987)
- Bean DJ, **Hollis JM**, Woo SL-Y, Convery FR: Sustained Pressurization of Polymethylmethacrylate - A Comparison of Low and Moderate Viscosity Bone Cements. *Journal of Orthopedic Research* 6(4): 580-584 (1988)
- Lyon RM, Woo SL-Y, **Hollis JM**, Marcin JP, Lee EB: A New Device to Measure the Structural Properties of the Femur-Anterior Cruciate Ligament-Tibia Complex. *Journal of Biomechanical Engineering* 111:350-354 (1989)
- **Hollis JM**, Takai S, Adams DJ, Horibe S, Woo SL-Y: The Effects of Knee Motion and External Loading on the Length of the Anterior Cruciate Ligament (ACL): A Kinematic Study. *Journal of Biomechanical Engineering* 113:208-214 (1991)

- Woo SL-Y, **Hollis JM**, Adams DJ, Lyon RM, Takai S.: Tensile Properties of the Human Femur-Anterior Cruciate Ligament-Tibia Complex: The Effects of Specimen Age and Orientation. *Am J Sports Med* 19(3): 217-225 (1991)
- **Hollis JM**: Use of a Six Degree of Freedom Position Control Actuator to Study Joint Mechanics. *Advances in Bioengineering* 20:409 (ASME) (1991)
- Flahiff CM, Nelson CL, Gruenwald JM, **Hollis JM**: A Biomechanical Evaluation of an Intramedullary Fixation Device for Intertrochanteric Fractures. *J Trauma* 35:23-27 (1993)
- Hadjari MH, **Hollis JM**, Hofmann OE, Flahiff CM, Nelson CL: Initial Stability of Porous Coated Acetabular Implants: The Effect of Screw Placement, Screw Tightness, Defect Type, and Oversize Implants. *Clinical Orthopedics* 307:117-123 (1994)
- **Hollis JM**, Blasier RD, Flahiff CM: Simulated Lateral Ankle Ligament Injury: Change in Ankle Stability. *Am J Sports Med* 23(6): 672-677 (1995)
- **Hollis JM**, Blasier RD, Flahiff CM, Hofmann OE: Biomechanical Comparison of Reconstruction Techniques in Simulated Lateral Ankle Ligament Injury. *Am J Sports Med* 23(6): 678-682 (1995)
- Flahiff CM, Brooks AT, **Hollis JM**, Vander Shilden JL, Nicholas RW: Biomechanical Analysis of Patellar Tendon Allografts as a Function of Age. *Am J Sports Med* 23(3): 354-358 (1995)
- **Hollis JM**, Niciforis PW, Pearsall AW. Change in Mensical Strain with ACL Injury and After Reconstruction. *Am J Sports Med* 28(5): 700-04 (2000)
- Pearsall, AW; **Hollis, JM**; Russell, Jr., GV; Stokes, D: "A Biomechanical Comparison of Reconstruction Techniques for Disruption of the Acromioclavicular and Coracoclavicular Ligaments." *J Southern Ortho Assoc. Spring 2002: 11(1):11-17*
- Albert W. Pearsall, IV, MD; **J. Marcus Hollis, PhD**; George V. Russell, Jr., MD; Zachary Scheer, BS: "A Biomechanical Comparison of Three Lower Extremity Tendons for Ligamentous Reconstruction about the Knee". *Arthroscopy*. Vol 19, No. 10, 2003
- Pearsall, AW; **Hollis, JM**: "The Effect of Posterior Cruciate Ligament Injury and Reconstruction Upon Meniscal Strain." *The American Journal of Sports Medicine*. In Press

- **Hollis JM**, Woo SL-Y: Estimation of ACL Loads *in situ*: Indirect Methods. In: The Anterior Cruciate Ligament: Current and Future Concepts, D.W. Jackson (ed.), Raven Press
- Flahiff CM, **Hollis JM**: “Mechanical Properties and Use of Orthopedic Graft Tissues” in Encyclopedia Handbook of Biomaterials and Bioengineering Part A: Materials. Wise, D.L. (ed.) Marcel Dekker, Inc., 1(16):517-539 (1995)
- **Hollis JM**, Flahiff CM: “Factors Affecting Bone Ingrowth” in Encyclopedia Handbook of Biomaterials and Bioengineering Part B: Applications. Wise, D.L. (ed.) Marcel Dekker, Inc., 1(29):799-821 (1995)
- Crary JL, **Hollis JM**, Manoli A 2nd. The effect of plantar fascia release on strain in the spring and long plantar ligaments. *Foot Ankle Int.* 2003 Mar;24(3):245-50.
- Pearsall, AW; **Hollis, JM**: “The Effect of Posterior Cruciate Ligament Injury and Reconstruction Upon Meniscal Strain.” *The American Journal of Sports Medicine*. Am J Sports Med. 2004 Oct-Nov;32(7):1675-80.
- Kovalski JE, **Hollis MJ**, Norell PM, Vicory JR, Heitman RJ. Sex and competitive status in ankle inversion-eversion range of motion of college students. *Percept Mot Skills*. 2004 Dec;99(3 Pt 2):1257-62.
- Pearsall AW, Kovalski JE, Heitman RJ, Gurchiek LR, **Hollis JM**. The relationships between instrumented measurements of ankle and knee ligamentous laxity and generalized joint laxity. *J Sports Med Phys Fitness*. 2006 Mar;46(1):104-10.
- JE Kovalski, PM Norrell, RJ Heitman, **JM Hollis**, AW Pearsall, Knee and Ankle Position, Anterior Drawer Laxity, and Stiffness of the Ankle Complex, *Journal of Athletic Training* 2008;43(3)

The papers and presentations section represents a partial listing of Dr. Hollis’ research and published documents. A complete list can be supplied upon request.

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