

Snehal S. Shetye, Ph.D.

Curriculum Vitae

CONTACT INFORMATION

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FORMAL EDUCATION

Doctor of Philosophy (Ph.D.) 09/2010

Department of Mechanical Engineering
Colorado State University
Fort Collins, CO
Dissertation: Development of a novel endoprosthesis for canine limb-sparing using a finite element approach
Advisor: Christian Puttlitz, PhD

Master of Science (M.S.) 05/2008

Department of Mechanical Engineering
Colorado State University
Fort Collins, CO

Bachelor of Engineering (B.E.) 06/2003

Department of Mechanical Engineering
University of Pune
Pune, India

PROFESSIONAL/ACADEMIC EXPERIENCE

Senior Researcher April 2016 - Present

McKay Orthopaedic Research Laboratory
University of Pennsylvania

Postdoctoral Fellow Sep 2011-March 2015

Department of Mechanical Engineering
Colorado State University

Postdoctoral Associate Oct 2010-Sep 2011

Department of Orthopaedic Surgery
University of Pittsburgh

Graduate Research Assistant 2008 - 2010

Department of Mechanical Engineering
Colorado State University

Graduate Teaching Assistant 2007-2008

Department of Mechanical Engineering

Computer Programmer 2006

United States Department of Agriculture
Animal Population Health Institute
Colorado State University
Fort Collins, CO

Graduate Teaching Assistant 2004

Department of Mechanical Engineering
Colorado State University

BOOK CHAPTERS

Troyer KL, Shetye SS, Puttlitz CM, “Viscoelasticity of Load-Bearing Soft Tissues: Constitutive Formulation, Numerical Integration, and Computational Implementation”, In “*Computational Bioengineering*”, CRC Press/Taylor & Francis, 2015

PEER-REVIEWED PUBLICATIONS

In Print/In Press

1. Shetye SS, Malhotra K, Ryan SD, Puttlitz CM. “Determination of Mechanical Properties of Canine Carpal Ligaments.” *American Journal of Veterinary Research* 70(8):1026-30, 2009
2. Leahy PD, Smith BJ, Easton KL, Kawcak CE, Shetye SS, Puttlitz, CM. “Correlation of Mechanical Properties within the Equine Third Metacarpal with Trabecular Bending and Multi-Density Micro-Computed Tomography Data.” *Bone* 2010 Apr; 46(4):1108-13
3. Troyer KL, Shetye SS, Puttlitz CM. “Experimental characterization and finite element implementation of soft tissue nonlinear viscoelasticity.” *J Biomech Eng* 2012 Nov; 134 (11):114501
4. Shetye SS, Troyer KL, Streijger F, Lee, JHT, Kwon BK, Crompton P, Puttlitz CM. “Nonlinear viscoelastic characterization of the porcine spinal cord.” *Acta Biomaterialia*, 2014 Feb;10(2):792-7
5. Shetye SS, Deault M, Puttlitz CM, “Biaxial response of ovine spinal cord dura mater”, *J Mech Behav Biomed Mater*. 2014 Jun;34:146-53
6. Zheng L, Li K, Shetye SS, Zhang X, “Integrating dynamic stereo-radiography and surface-based motion data for subject-specific musculoskeletal dynamic modeling”, *J Biomech*. 2014 Sep 22;47(12):3217-21.
7. Wray S, Mimran R, Vadapalli S, Shetye SS, McGilvray K, Puttlitz CM, “Pedicule screw placement in the lumbar spine: effect of trajectory and screw design on acute biomechanical purchase”, *Journal of Neurosurgery – Spine*

8. Maulucci CM, Sansur CA, Singh V, Cholewczynski A, **Shetye SS**, McGilvray K, Puttlitz CM, “Cortical bone facet spacers for cervical spine decompression: effect on intervertebral kinetics and foraminal area”, *Journal of Neurosurgery – Spine*
9. Pulos N, Yoon RS, Shetye SS, Hast MW, Liporace F, Donegan DJ, "Anteroinferior 2.7-mm versus 3.5-mm palting of the clavicle: A biomechanical study", *Injury*, 2016 Aug;47(8)1642-6

In Review

9. Ramo N, **Shetye SS**, Puttlitz CM, “Damage Accumulation Modeling and Rate Dependency of Spinal Dura Mater”, *Journal of Biomechanical Engineering*

ABSTRACTS AND CONFERENCE PROCEEDINGS

1. **Shetye SS**, Freedman BR, Fryhofer GW, Riggin CN, Gordon JA, Thomas SJ, Farber DC, Soslowsky LJ. Structural and In Vivo Function Measures Predict Achilles Tendon Fatigue Mechanics During Healing. Orthopaedic Society Annual Meeting, San Diego, CA, 2017. (poster presentation)
2. Benjamin C. Gadowski, **Snehal Shetye**, Brandon Santoni, Michael Todd, Vincent Traynelis, Ricardo Fontes, Christian Puttlitz. "The Effect of Cervical Spine Injury on Intervertebral Kinetics and Spinal Cord Strain during Direct Laryngoscopy: A Computational Investigation", Orthopaedic Research Society Annual Meeting, San Diego, CA, 2017
3. **Shetye SS**, Johnston JM, Connizzo BK, Robinson KA, Huegel J, Rodriguez AB, Sun M, Adams SM, Birk DE, Soslowsky LJ. "Collagen V Haploinsufficiency Results in Deficient Mechanical and Structural Recovery of Injured Mouse Patellar Tendons", Orthopaedic Research Society Annual Meeting, San Diego, CA, 2017
4. Robinson, K., Barnum, C., Weiss, S., Huegel, J., **Shetye, S.**, Sun, M., Adams, S., Birk, D., Soslowsky, L. (2016). "Conditional deletion of decorin and biglycan in mature mouse tendons results in delayed collagen fiber realignment", Orthopaedic Research Society Annual Meeting, San Diego, CA, 2017
5. B.C Gadowski, **S.S. Shetye**, B.J. Hindman, B.G. Santoni, M.M. Todd, V.C. Traynelis, R.B. Fontes, C.M. Puttlitz. "The Role of Cervical Spine Injury Type on Spinal Cord Strain Predictions during Direct Laryngoscopy", Cervical Spine Research Society Annual Meeting, Toronto, Canada, 2016
6. **Shetye SS**, Streijger F, Strickland C, Lee J.H.T, Kwon BK, Crompton PA, Shipman PD, Puttlitz CM, “The In Vivo Viscoelastic Response of the porcine Spinal Cord”, Summer Biomechanics, Bioengineering and Biotransport Conference, Snowbird Resort, Utah 2015
7. Ramo N, **Shetye SS**, Puttlitz CM, “Damage Accumulation Modeling and Rate Dependency of Spinal Dura Mater”, Summer Biomechanics, Bioengineering and Biotransport Conference, Snowbird Resort, Utah 2015
8. **Shetye SS**, Troyer KL, Streijger F, Lee J.H.T, Kwon BK, Crompton PA, Puttlitz CM, “In Vitro Nonlinear Viscoelastic Characterization of the Porcine Spinal Cord”, Proceedings of the ASME 2013 Summer Bioengineering Conference, Sunriver, OR 2013
9. **Shetye SS**, Puttlitz CM, “Biaxial Response of Ovine Spinal Cord Dura Mater”, Proceedings of the ASME 2013 Summer Bioengineering Conference, Sunriver, OR 2013

10. Bumstead J, Carey R, Moloney G, **Shetye SS**, Harner C, Zhang X, “Sensitivity of Insertion Site Morphometry to Imperfect Sagittal Views”, Orthopaedic Research Society, San Francisco, CA 2012
11. **Shetye SS**, Li K, Tashman S, Zhang X. “Incorporation of Dynamic X-ray Based Knee Kinematics Improves Quadriceps Force Prediction in Musculoskeletal Modeling”, American Society of Biomechanics, Long Beach, CA 2011
12. Li K, **Shetye SS**, Tashman S, Zhang X. “Comparing surface-marker based and X-ray based knee joint kinematics during functional activities”, American Society of Biomechanics, Long Beach, CA 2011
13. **Shetye SS**, Ryan SD, Ehrhart Nicole, Puttlitz CM. “Novel Endoprosthesis for Limb Sparing of Canine Distal Radius Osteosarcoma Patients - A Modular Approach”, ASME Summer Bioengineering Conference, Farmington, PA 2011
14. **Shetye SS**, Puttlitz CM. “Evaluation of a Distal Radius Endoprosthesis Using a Validated Finite Element Model of the Canine Antebrachium.”, Computer Methods in Biomechanics and Biomedical Engineering, Valencia, Spain, February 24-27, 2010
15. **Shetye SS**, Ryan SD, Puttlitz CM. “The Mechanical Underpinning of Clinical Failures in a Distal Radius Endoprosthesis currently used for Canine Limb Sparing.”, Veterinary Orthopedic Society Conference, Breckenridge, Colorado, February 20-27, 2010
16. **Shetye SS**, Puttlitz CM. “The Use of a Locking Vs. Non-Locking Plate in a Distal Radius Endoprosthesis for Canine Limb Sparing”, 18th Annual Symposium on Computational Methods in Orthopaedic Biomechanics, New Orleans, Louisiana, March 5th, 2010
17. **Shetye SS**, Lyons AS, Bhattacharjee A, Abjornson C, Puttlitz CM. “Radiographic and Histological Evaluation of a Surface Demineralized Flexible Allograft Chain in an Ovine Vertebra Body Model.” Orthopaedic Research Society, New Orleans, Louisiana, March 6-9, 2010
18. **Shetye SS**, Lyons AS, Bhattacharjee A, Abjornson C, Puttlitz CM. “Evaluation of a Surface Demineralized Flexible Allograft Chain in An Ovine Vertebra Body Model..” Spine Arthroplasty Society, New Orleans, Louisiana, April 27-30, 2010
19. Tichota RG, Puttlitz CM, Lyons AS, Troyer K, **Shetye SS**, Womack WL, Arslanoglu R, Santoni BG. “A biomechanical study of a limited motion device for lumbar posterior stabilization in an ovine model. 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 22-25, 2009
20. **Shetye SS**, Malhotra K, Rodriguez-Canessa G, Ryan SD, Puttlitz CM. “Mechanical Behavior of Canine Antebrachiocarpal Ligaments and its Relation to Collagen Content.” Veterinary Orthopedic Society Conference, Big Sky, Montana, March 8-15, 2008

AD HOC MANUSCRIPT REVIEWER

Journal of the Mechanical Behavior of Biological Materials – Impact Factor 3.048

Journal of Biomechanical Engineering – *Transactions of the ASME* – Impact Factor 1.9

TEACHING EXPERIENCE

Instructor, Colorado State University Fall 2014
Engineering Experimentation (MECH231)

Guest Instructor, Colorado State University Fall 2013
Introduction to Bioengineering (BIOM/MECH 570)

Guest Instructor, Colorado State University <i>Machine Design (MECH 325)</i>	Spring 2013
Guest Instructor, Colorado State University <i>Introduction to Bioengineering (BIOM/MECH 570)</i>	Fall 2012
Guest Instructor, Colorado State University <i>Machine Design (MECH 325)</i>	Spring 2012
Guest Instructor, Colorado State University <i>Computer Applications in Mechanical Engineering (MECH 102)</i>	Spring 2008
Graduate Teaching Assistant, Colorado State University <i>Mechatronics and Measurement Systems (MECH 307)</i>	Fall 2004
Graduate Teaching Assistant, Colorado State University <i>Mechatronics and Measurement Systems (MECH 307)</i>	Spring 2007
Graduate Teaching Assistant, Colorado State University <i>Mechatronics and Measurement Systems (MECH 307)</i>	Fall 2007
Graduate Teaching Assistant, Colorado State University <i>Computer Applications in Mechanical Engineering (MECH 102)</i>	Spring 2008

REFERENCES

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Fairhill Professor

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Christian M. Puttlitz, Ph.D.

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