

Stanford



Matthew Smuck, MD

Associate Professor of Orthopaedic Surgery at the Stanford University Medical Center

CLINICAL OFFICES

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

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Bio

BIO

Dr. Matthew Smuck is the Chief of PM&R and Associate Professor in the Department of Orthopaedic Surgery at Stanford University. He is also the Medical Director of Rehabilitation Services for Stanford Healthcare where he specializes in the comprehensive conservative management of spine disorders. He is a physician leader currently sitting on the Board of Directors for the North American Spine Society, the Spine Intervention Society, and the Foundation for PM&R. He served as Deputy Editor of The Spine Journal and Co-Editor of the Orthopedics Knowledge Update in Spine (4th ed.). Dr. Smuck is also an award-winning researcher who pioneered the new field of physical performance monitoring. He directs the Wearable Health Lab at Stanford, investigating medical applications of mobile technology to improve musculoskeletal and neurologic disease detection, treatment and prevention. His work has received numerous research society awards and publication awards, including the American Academy of PM&R's 2014 President's Citation Award, the PM&R Journal and Foundation for PM&R's 2015 Best Original Research Award, the 2016 ISSLS Prize, and The Spine Journal's Outstanding Paper Award in 2013, 2016 & 2017. He regularly lectures on his research at Universities and medical conferences in the US and abroad.

CLINICAL FOCUS

- Physical Medicine and Rehab
- Spine
- Physical Medicine & Rehabilitation

ACADEMIC APPOINTMENTS

- Associate Professor - Med Center Line, Orthopaedic Surgery
- Member, Bio-X
- Member, Stanford Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, University of Michigan PM&R Interventional Spine Fellowship, (2007-2008)
- Interim Director, The University of Michigan Spine Program, (2008-2008)

- Director, Stanford PM&R Spine Fellowship, (2009-2014)
- Medical Director of Rehabilitation Services, Stanford University Hospital & Clinics, (2011- present)
- Chief, Physical Medicine & Rehabilitation, Stanford University, (2011- present)
- Director and Founder, Wearable Health Lab, (2014- present)

HONORS AND AWARDS

- Outstanding Paper Award: Surgical Science, The Spine Journal (2017)
- Runner-up: Outstanding Paper Award: Medical and Interventional Science, The Spine Journal (2017)
- The ISSLS Prize for Lumbar Spine Research, ISSLS (2016)
- Runner-up: Outstanding Paper Award: Medical and Interventional Science, The Spine Journal (2016)
- Best Original Research Award, Foundation for Physical Medicine and Rehabilitation and the PM&R Journal (2015)
- President's Citation Award, AAPM&R (2014)
- Best Pain and Spine Abstracts, American Academy of Physical Medicine & Rehabilitation (2014, 2013)
- Best Papers, North American Spine Society (NASS) Annual Meeting (2013, 2009)
- Instructor, International Spine Intervention Society (2013)
- Outstanding Paper Award: Medical and Interventional Science, The Spine Journal (2013)
- Best Clinical Research Award, International Spine Intervention Society (2014, 2013, 2012)
- Medtronic Best Poster Award, International Society for the Study of the Lumbar Spine (2012)
- Best Basic Science Research Award, International Spine Intervention Society (2011)
- Best Musculoskeletal Research Award, American Academy of Physical Medicine & Rehabilitation (2011)
- Jose C. Montero MD Teaching Award, Stanford University, PM&R residency program (2010)
- Faculty Mentor, 1st Place Theodore M. Cole Resident Research Award, University of Michigan (2009, 2007, 2004)
- Young Investigator Award, US Bone and Joint Decade (2006)
- Most Outstanding Biomedical Research Paper, Indiana University School of Medicine (1997)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Board of Directors, Foundation for PM&R (2016 - present)
- Board of Directors, North American Spine Society (NASS) (2015 - present)
- Board of Directors, Spine Intervention Society (SIS) (2013 - present)
- North American Representative, ICHOM Low Back Pain Steering Group (2014 - present)
- Deputy Editor, The Spine Journal (2011 - present)
- Assistant Editorial Board, European Spine Journal (2011 - present)
- Chair, Research Division, Spine Intervention Society (SIS) (2013 - 2015)
- Co-Chair, North American Spine Society 2013 annual meeting (2013 - 2014)
- Chair, NASS Advanced Lumbar Spinal Injections Course (2011 - 2015)
- Co-Editor, Orthopedics Knowledge Update (OKU) Spine, 4th edition (2011 - 2012)
- Vice Chair, Spine and Pain Track, AAPM&R Program Planning Committee (2010 - present)
- Section Editor, Spine & Sports, SpineLine (2008 - 2013)

PROFESSIONAL EDUCATION

- Residency: Stanford University School of Medicine Registrar (2001) CA

- Board Certification: Physical Medicine and Rehab, American Board of Physical Medicine and Rehab (2002)
- Board Certification: Pain Medicine, American Board of Physical Medicine and Rehab (2003)
- Fellowship: Stanford University Hospital - Interventional Spine (2002) CA
- Internship: Oakwood Healthcare System (1998) MI
- Medical Education: Indiana University School of Medicine (1997) IN
- Fellow, Stanford University , Interventional Spine Medicine (2002)
- Resident, Stanford University , PM&R (2001)
- M.D., Indiana University , School of Medicine (1997)
- B.S., Milligan College , Biology, Humanities, French (1993)

COMMUNITY AND INTERNATIONAL WORK

- Exercise Committee
- ICHOM Low Back Pain Workgroup

LINKS

- Wearable Health Lab: <http://pmr.stanford.edu/research/cmmt.html>
- Public lecture on "Non Invasive Treatment of Back Pain" to the Stanford community: <http://www.youtube.com/watch?v=BEQIPv79EU0>
- The Spine Journal's 2013 Outstanding Paper Awards presentation: https://www.youtube.com/watch?v=z_uDicD42ro#t=565
- On Mobile Technology in Medical Research: <http://www.healio.com/spine-surgery/basic-science/news/online/%7B2ebf18f6-9ae2-4b0e-ae94-be4cea026abb%7D/video-smuck-on-barriers-in-spine-research>
- mHealth Connect conference presentations: <https://www.youtube.com/watch?v=6eXwqqGz204&feature=youtu.be>
- Spine Foundation Research Summit - Occupational Factors: <https://elearning.spine.org/Mediasite7/Play/ce30b41bd45f47ada8e764f17e97eee31d?catalog=23a72182-c7c7-478f-925b-4a86d96932e1>
- ICHOM outcomes recommendations for low back pain: <http://www.ichom.org/project/low-back-pain/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I direct the Wearable Health Lab at Stanford, investigating medical applications of mobile technology to improve musculoskeletal and neurologic disease detection, treatment and prevention.

CLINICAL TRIALS

- Prescribed Physical Activity in Improving Sleep and Physical Performance in Patients Undergoing Stem Cell Transplant, Not Recruiting

Teaching

STANFORD ADVISEES

Med Scholar Project Advisor

Justin Norden

Publications

PUBLICATIONS

- **Stagnant Physical Therapy Referral Rates Alongside Rising Opioid Prescription Rates in Patients With Low Back Pain in the United States 1997-2010** *SPINE*
Zheng, P., Kao, M., Karayannis, N. V., Smuck, M.

2017; 42 (9): 670-674

- **Long-Term Effects of Repeated Injections of Local Anesthetic With or Without Corticosteroid for Lumbar Spinal Stenosis: A Randomized Trial.** *Archives of physical medicine and rehabilitation*
Friedly, J. L., Comstock, B. A., Turner, J. A., Heagerty, P. J., Deyo, R. A., Bauer, Z., Avins, A. L., Nedeljkovic, S. S., Nerenz, D. R., Shi, X. R., Annaswamy, T., Standaert, C. J., Smuck, et al
2017
- **Physical performance analysis: A new approach to assessing free-living physical activity in musculoskeletal pain and mobility-limited populations.** *PLoS one*
Smuck, M., Tomkins-Lane, C., Ith, M. A., Jarosz, R., Kao, M. J.
2017; 12 (2)
- **The Impact of Body Mass Index on Fluoroscopy Time During Lumbar Epidural Steroid Injection; A Multicenter Cohort Study.** *Pain medicine (Malden, Mass.)*
McCormick, Z. L., Choxi, S. C., Lee, D. T., Marcolina, A., Press, J., Kennedy, D. J., Smuck, M., Walega, D. R., Cushman, D. M.
2017; 18 (1): 25-35
- **Objective measurement of free-living physical activity (performance) in lumbar spinal stenosis: are physical activity guidelines being met?** *The spine journal : official journal of the North American Spine Society*
Norden, J., Smuck, M., Sinha, A., Hu, R., Tomkins-Lane, C.
2017; 17 (1): 26-33
- **Immediate Adverse Events in Interventional Pain Procedures: A Multi-Institutional Study.** *Pain medicine*
Carr, C. M., Plastaras, C. T., Pingree, M. J., Smuck, M., Maus, T. P., Geske, J. R., El-Yahchouchi, C. A., McCormick, Z. L., Kennedy, D. J.
2016; 17 (12): 2155-2161
- **ISSLS Prize Winner: Consensus on the Clinical Diagnosis of Lumbar Spinal Stenosis: Results of an International Delphi Study.** *Spine*
Tomkins-Lane, C., Melloh, M., Lurie, J., Smuck, M., Battié, M. C., Freeman, B., Samartzis, D., Hu, R., Barz, T., Stuber, K., Schneider, M., Haig, A., Schizas, et al
2016; 41 (15): 1239-1246
- **Is There a Relationship Between Body Mass Index and Fluoroscopy Time During Sacroiliac Joint Injection? A Multicenter Cohort Study.** *Pain medicine*
McCormick, Z. L., Cushman, D., Lee, D. T., Scholten, P., Chu, S. K., Babu, A. N., Caldwell, M., Ziegler, C., Ashraf, H., Sundar, B., Clark, R., Gross, C., Cara, et al
2016; 17 (7): 1241-1248
- **Detection of Intravascular Injection During Lumbar Medial Branch Blocks: A Comparison of Aspiration, Live Fluoroscopy, and Digital Subtraction Technology** *PAIN MEDICINE*
Kennedy, D. J., Mattie, R., Hamilton, A. S., Conrad, B., Smuck, M.
2016; 17 (6): 1031-1036
- **Immediate Adverse Events in Interventional Pain Procedures: A Multi-Institutional Study.** *Pain medicine*
Carr, C. M., Plastaras, C. T., Pingree, M. J., Smuck, M., Maus, T. P., Geske, J. R., El-Yahchouchi, C. A., McCormick, Z. L., Kennedy, D. J.
2016
- **(471) The relationship between body mass index and fluoroscopy time during intra-articular hip injections: a multicenter cohort study.** *journal of pain*
Bhave, M., MCCORMICK, Z., Lee, D., Scholten, P., Chu, S., Babu, A., Caldwell, M., Ziegler, C., Ashraf, H., Cara, J., Clark, R., McCormick, K., Gross, et al
2016; 17 (4S): S92-?
- **(466) The impact of body mass index on fluoroscopy time during lumbar epidural steroid injection: a multicenter cohort study.** *journal of pain*
Choxi, S., MCCORMICK, Z., Cushman, D., WALEGA, D., Lee, D., Marcolina, A., Press, J., Kennedy, D., Smuck, M.
2016; 17 (4S): S90-S91
- **The Effects of Local Anesthesia Administration on Pain Experience During Interventional Spine Procedures: A Prospective Controlled Trial** *PAIN MEDICINE*
Bakshi, R., Berri, H., Kalpakjian, C., Smuck, M.
2016; 17 (3): 488-493
- **Adverse Event Rates Associated with Transforaminal and Interlaminar Epidural Steroid Injections: A Multi-Institutional Study** *PAIN MEDICINE*
El-Yahchouchi, C. A., Plastaras, C. T., Maus, T. P., Carr, C. M., McCormick, Z. L., Geske, J. R., Smuck, M., Pingree, M. J., Kennedy, D. J.
2016; 17 (2): 239-249

- **[18F]FDG PET/MRI of patients with chronic pain alters management: early experience.** *EJNMMI physics*
Biswal, S., Behera, D., Yoon, D. H., Holley, D., Ith, M. A., Carroll, I., Smuck, M., Hargreaves, B.
2015; 2: A84-?
- **Differential Rates of Inadvertent Intravascular Injection during Lumbar Transforaminal Epidural Injections Using Blunt-Tip, Pencil-Point, and Catheter-Extension Needles** *PAIN MEDICINE*
Smuck, M., Paulus, S., Patel, A., Demirjian, R., Ith, M. A., Kennedy, D. J.
2015; 16 (11): 2084-2089
- **A proposed set of metrics for standardized outcome reporting in the management of low back pain.** *Acta orthopaedica*
Clement, R. C., Welander, A., Stowell, C., Cha, T. D., Chen, J. L., Davies, M., Fairbank, J. C., Foley, K. T., Gehrchen, M., Hagg, O., Jacobs, W. C., Kahler, R., Khan, et al
2015; 86 (5): 523-533
- **Morphologic changes in the lumbar spine after lumbar medial branch radiofrequency neurotomy: a quantitative radiological study** *SPINE JOURNAL*
Smuck, M., Crisostomo, R. A., Demirjian, R., Fitch, D. S., Kennedy, D. J., Geisser, M. E.
2015; 15 (6): 1415-1421
- **The Use of Moderate Sedation for the Secondary Prevention of Adverse Vasovagal Reactions** *PAIN MEDICINE*
Kennedy, D. J., Schneider, B., Smuck, M., Plastaras, C. T.
2015; 16 (4): 673-679
- **Determinants of Physical Activity in America: A First Characterization of Physical Activity Profile Using the National Health and Nutrition Examination Survey (NHANES)** *PM&R*
Kao, M. J., Jarosz, R., Goldin, M., Patel, A., Smuck, M.
2014; 6 (10): 882-892
- **A quantitative study of intervertebral disc morphologic changes following plasma-mediated percutaneous discectomy.** *Pain medicine*
Smuck, M., Levin, J., Zemper, E., Ali, A., Kennedy, D. J.
2014; 15 (10): 1695-1703
- **Trainee Involvement in Transforaminal Epidural Steroid Injections Associated With Increased Incidence of Vasovagal Reactions** *PM&R*
Schneider, B., Kennedy, D. J., Casey, E., Smuck, M., Conrad, B.
2014; 6 (10): 914-919
- **A Quantitative Study of Intervertebral Disc Morphologic Changes Following Plasma-Mediated Percutaneous Discectomy** *PAIN MEDICINE*
Smuck, M., Levin, J., Zemper, E., Ali, A., Kennedy, D. J.
2014; 15 (10): 1695-1703
- **A Randomized Trial of Epidural Glucocorticoid Injections for Spinal Stenosis** *NEW ENGLAND JOURNAL OF MEDICINE*
Friedly, J. L., Comstock, B. A., Turner, J. A., Heagerty, P. J., Deyo, R. A., Sullivan, S. D., Bauer, Z., Bresnahan, B. W., Avins, A. L., Nedeljkovic, S. S., Nerenz, D. R., Standaert, C., Kessler, et al
2014; 371 (1): 11-21
- **Trends in ambulatory physician opioid prescription in the United States, 1997-2009.** *PM & R : the journal of injury, function, and rehabilitation*
Jeffrey Kao, M., Minh, L. C., Huang, G. Y., Mitra, R., Smuck, M.
2014; 6 (7): 575-582 e4
- **Reply to letter to the editor "Morphologic changes in the lumbar spine following lumbar medial branch radiofrequency neurotomy: a quantitative radiologic study".** *spine journal*
Smuck, M., Crisostomo, R. A., Demirjian, R., Fitch, D. S., Kennedy, D. J., Geisser, M. E.
2014; 14 (6): 1089-1090
- **Assessment and management of back pain.** *JAMA internal medicine*
Kao, M., Zheng, P., Smuck, M.
2014; 174 (3): 479-?
- **Does physical activity influence the relationship between low back pain and obesity?** *SPINE JOURNAL*
Smuck, M., Kao, M. J., Brar, N., Martinez-Ith, A., Choi, J., Tomkins-Lane, C. C.
2014; 14 (2): 209-216

- **Vasovagal Rates in Fluoroscopically Guided Interventional Procedures: A Study of Over 8,000 Injections** *PAIN MEDICINE*
Kennedy, D. J., Schneider, B., Casey, E., Rittenberg, J., Conrad, B., Smuck, M., Plastaras, C. T.
2013; 14 (12): 1854-1859
- **Duration of fluoroscopic-guided spine interventions and radiation exposure is increased in overweight patients.** *PM & R : the journal of injury, function, and rehabilitation*
Smuck, M., Zheng, P., Chong, T., Kao, M., Geisser, M. E.
2013; 5 (4): 291-296
- **Correlation of Paraspinal Atrophy and Denervation in Back Pain and Spinal Stenosis Relative to Asymptomatic Controls** *PM&R*
Yarjanian, J. A., Fetzter, A., Yamakawa, K. S., Tong, H. C., Smuck, M., Haig, A.
2013; 5 (1): 39-44
- **Cervical Foraminal Versus Interlaminar Epidurals: Risks, Benefits, and Alternatives.** *Curr Phys Med Rehabil Rep.* 2013 June;1(2)
Smuck, M., Demirjian, R., Kennedy, D. J.
2013; 1 (2): 125-134
- **Commentary: More or less satisfied?** *SPINE JOURNAL*
Smuck, M.
2012; 12 (12): 1140-1141
- **Functional assessment of the acute local and distal transplantation of human neural stem cells after spinal cord injury** *SPINE JOURNAL*
Cheng, I., Mayle, R. E., Cox, C. A., Park, D. Y., Smith, R. L., Corcoran-Schwartz, I., Ponnusamy, K. E., Oshtory, R., Smuck, M. W., Mitra, R., Kharazi, A. I., Carragee, E. J.
2012; 12 (11): 1040-1044
- **Success of Initial and Repeated Medial Branch Neurotomy for Zygapophysial Joint Pain: A Systematic Review** *PM&R*
Smuck, M., Crisostomo, R. A., Trivedi, K., Agrawal, D.
2012; 4 (9): 686-692
- **Preseason Training for Golfers with Low Back Pain** *SpineLine*
Roh EY, G. S.
2012; 13 (1): 17-21
- **Sacral Stress Fractures in Athletes** *SpineLine May/June*
Watanabe LM, Smuck M, Fredericson M
2012; 13 (3): 19-25
- **Orthopaedic Knowledge Update: Spine 4** *American Academy of Orthopaedic Surgeons*
Rao RD, S.
2012: ISBN 978-089203-737-
- **Evaluation of the Athlete With Buttock Pain** *CURRENT SPORTS MEDICINE REPORTS*
Vasudevan, J. M., Smuck, M., Fredericson, M.
2012; 11 (1): 35-42
- **Commentary: One small step** *SPINE JOURNAL*
Smuck, M., Carragee, E. J.
2011; 11 (9): 824-825
- **Inadvertent Injection of a Cervical Radicular Artery Using an Atraumatic Pencil-Point Needle** *SPINE*
Smuck, M., Leung, D.
2011; 36 (3): E220-E223
- **Vascular causes of radiculopathy: a literature review** *SPINE JOURNAL*
Benny, B. V., Nagpal, A. S., Singh, P., Smuck, M.
2011; 11 (1): 73-85
- **Diagnostic Imaging of Painful Lumbar Facet Joints** *Spine: Evidence-Based Interventional Spine Care. Demos*
Smuck M, Agrawal D

2011; 1st ed: 80-89

- **Utility of the anesthetic test dose to avoid catastrophic injury during cervical transforaminal epidural injections** *SPINE JOURNAL*
Smuck, M., Maxwell, M. D., Kennedy, D., Rittenberg, J. D., Lansberg, M. G., Plastaras, C. T.
2010; 10 (10): 857-864
- **Basic Appearance of Ultrasound Structures and Pitfalls** *PHYSICAL MEDICINE AND REHABILITATION CLINICS OF NORTH AMERICA*
McDonald, S., Fredericson, M., Roh, E. Y., Smuck, M.
2010; 21 (3): 461-?
- **Considering value** *SPINE JOURNAL*
Smuck, M.
2010; 10 (6): 505-506
- **Influence of needle type on the incidence of intravascular injection during transforaminal epidural injections: a comparison of short-bevel and long-bevel needles** *SPINE JOURNAL*
Smuck, M., Yu, A. J., Tang, C., Zemper, E.
2010; 10 (5): 367-371
- **Plasma disc decompression compared with fluoroscopy-guided transforaminal epidural steroid injections for symptomatic contained lumbar disc herniation: a prospective, randomized, controlled trial** *CLINICAL ARTICLE JOURNAL OF NEUROSURGERY-SPINE*
Gerszten, P. C., Smuck, M., Rathmell, J. P., Simopoulos, T. T., Bhagia, S. M., Mocek, C. K., Crabtree, T., Bloch, D. A.
2010; 12 (4): 357-371
- **Adhesive capsulitis: a new management protocol to improve passive range of motion.** *PM & R : the journal of injury, function, and rehabilitation*
Mitra, R., Harris, A., Umphrey, C., Smuck, M., Fredericson, M.
2009; 1 (12): 1064-1068
- **Adhesive Capsulitis: A New Management Protocol to Improve Passive Range of Motion** *PM&R*
Mitra, R., Harris, A., Umphrey, C., Smuck, M., Fredericson, M.
2009; 1 (12): 1064-1068
- **Incidence of simultaneous epidural and vascular injection during cervical transforaminal epidural injections.** *Spine*
Smuck, M., Tang, C., Fuller, B. J.
2009; 34 (21): E751-5
- **Evidence-Based Conviction** *PM&R*
Levin, J. H., Smuck, M.
2009; 1 (9): 891-892
- **Blind Man's Bluff** *SPINE JOURNAL*
Smuck, M.
2009; 9 (6): 518-519
- **Re: Manchikanti L, Singh V, Falco FJ, et al. Cervical medial branch blocks for chronic cervical facet joint pain: a randomized, double-blind, controlled trial with one-year follow-up. Spine 2008;33:1813-20.** *SPINE*
Smuck, M., Levin, J. H.
2009; 34 (10): 1116-1116
- **Considering Industry-Sponsored Research** *AMERICAN JOURNAL OF PHYSICAL MEDICINE & REHABILITATION*
Segal, N. A., Smuck, M., Sowa, G., Basford, J.
2009; 88 (4): 342-348
- **The use of epidural corticosteroids for cervical radiculopathy: an interlaminar versus transforaminal approach.** *PM & R : the journal of injury, function, and rehabilitation*
Smuck, M., Rosenberg, J. M., Akuthota, V.
2009; 1 (2): 178-184
- **Cervical Injections: Is the Risk Worth the Benefit?** *SpineLine*
Fish D, Behr J, Smuck M
2009; 10 (1): 18-22

- **Interpretation of Contrast Dispersal Patterns by Experienced and Inexperienced Interventionalists** *PM&R*
Smuck, M., Abbott, Z., Zemper, E.
2009; 1 (1): 55-59
- **Tissue injury and healing** *Sports Medicine and Rehabilitation: A Sport-Specific Approach*
Christensen-Holz S, Smuck M
2009; 2nd ed.: 17-22
- **Mountain Biking Injuries** *Sports Medicine and Rehabilitation: A Sport-Specific Approach*
Smuck M
2009; 2nd ed.: 119-128
- **Interpretation of contrast dispersal patterns by experienced and inexperienced interventionalists.** *PM & R : the journal of injury, function, and rehabilitation*
Smuck, M., Abbott, Z., Zemper, E.
2009; 1 (1): 55-59
- **Intravascular Injection of Contrast During Lumbar Discography: A Previously Unreported Complication** *PAIN MEDICINE*
Smuck, M., Yoon, T., Colwell, M.
2008; 9 (8): 1030-1034
- **Nociception before and after exercise in rats bred for high and low aerobic capacity** *NEUROSCIENCE LETTERS*
Geisser, M. E., Wang, W., Smuck, M., Koch, L. G., Britton, S. L., Lydic, R.
2008; 443 (1): 37-40
- **Accuracy of intermittent fluoroscopy to detect intravascular injection during transforaminal epidural injections** *SPINE*
Smuck, M., Fuller, B. J., Chiodo, A., Benny, B., Singaracharlu, B., Tong, H., Ho, S.
2008; 33 (7): E205-E210
- **Literature Review: New From the Journals** *SpineLine*
Smuck M, Levin J, Arnold P
2008; 9 (6): 34-37
- **Sacroiliac joint pain in athletes: A biomechanical treatment approach** *SpineLine*
Christensen-Holz S, Wiggert B, Smuck M
2008; 9 (6): 30-33
- **An unusual cause of S1 radicular pain presenting as early phantom pain in a transfemoral amputee: A case report** *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION*
Smuck, M., Christensen, S., Lee, S. S., Sagher, O.
2008; 89 (1): 146-149
- **Re: Scanlon GC, Moeller-Bertram T, Romanowsky SM, et al. Cervical transforaminal epidural steroid injections: more dangerous than we think? Spine 2007;32:1249-56.** *Spine*
Smuck, M. W., Levin, J. H.
2007; 32 (23): 2638-?
- **Author reply to "Letter to the editor" by Manchikanti and Singh (Spine J. 2007(5)) regarding "Incidence of simultaneous epidural and vascular injection during lumbosacral transforaminal epidural injections"** *SPINE JOURNAL*
Smuck, M., Fuller, B. J.
2007; 7 (6): 749-749
- **Irreversible spinal nerve injury from dorsal ramus radiofrequency neurotomy: A case report** *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION*
Abbott, Z., Smuck, M., Haig, A., Sagher, O.
2007; 88 (10): 1350-1352
- **Epidural fibrosis following percutaneous disc decompression with coblation technology.** *Pain physician*
Smuck, M., Benny, B., Han, A., Levin, J.
2007; 10 (5): 691-696

- **Radiculopathy from herniation of the nucleus pulposus: 2. The role of corticosteroids** *J. Back Musculoskeletal Rehabil*
Levin J, Smuck M
2007; 20 (2,3): 103-113
- **Incidence of simultaneous epidural and vascular injection during lumbosacral transforaminal epidural injections** *SPINE JOURNAL*
Smuck, M., Fuller, B. J., Yoder, B., Huerta, J.
2007; 7 (1): 79-82
- **Radiculopathy from herniation of the nucleus pulposus: 2. The role of corticosteroids** *JOURNAL OF BACK AND MUSCULOSKELETAL REHABILITATION*
Levin, J. H., Smuck, M. W.
2007; 20 (2-3): 103-113
- **Radiculopathy from herniation of the nucleus pulposus: 1. Epidemiology, pathophysiology, and natural history** *JOURNAL OF BACK AND MUSCULOSKELETAL REHABILITATION*
Levin, J. H., Smuck, M. W.
2007; 20 (2-3): 97-101
- **Incidence of simultaneous epidural and vascular injection during lumbosacral transforaminal epidural injections.** *spine journal*
Smuck, M., Fuller, B. J., Yoder, B., Huerta, J.
2007; 7 (1): 79-82
- **Radiculopathy from herniation of the nucleus pulposus: 1. Epidemiology, pathophysiology, and natural history** *J. Back Musculoskeletal Rehabil*
Levin J, Smuck M
2007; 20 (2,3): 97-101
- **Therapies for subacute back pain: A glossary approach, Section III Surgery and Injection treatments** *Back Pain: A Guide for the Primary Care Physician.*
Haig AJ, Smuck
2005: 308-313
- **Sacroiliac joint pain syndrome in active patients: A look behind the pain** *Physician and Sportsmedicine*
Chen Y, Fredericson M, Smuck M
2002; 30 (11): 30-37
- **Tissue injury and healing, outcomes with the sports medicine approach.** *Practical Guide to Musculoskeletal Disorders: Diagnosis & Rehabilitation.*
Smuck M, Buschbacker R
2002; 1st ed.: 3-11