

Randy J. Schmitz, PhD, ATC

Department of Kinesiology
216 Corbett
North Carolina Agricultural and Technical State University
Greensboro, NC 27411
Email: rjschmitz@ncat.edu

EDUCATION

- University of Virginia, Charlottesville VA, Doctor of Philosophy in Sports Medicine, May 1998.
- University of Virginia, Charlottesville VA, Master of Education, NATA Approved Graduate Curriculum in Athletic Training, August 1993.
- University of Wisconsin at LaCrosse, LaCrosse WI, Bachelor of Science in Physical Education with an Emphasis in Athletic Training, NATA Approved Undergraduate Curriculum, May 1992.

PROFESSIONAL POSITIONS

- Professor of Kinesiology, North Carolina Agricultural and Technical State University, 2024- present
- Professor of Kinesiology, University of North Carolina Greensboro, 2014- 2024
- Associate Professor, University of North Carolina Greensboro, 2004 - 2014
- Assistant Professor of Kinesiology, University of North Carolina Greensboro, 1998 - 2004.
- Graduate Instructor, University of Virginia, Curry School of Education. Summer 1996 - Spring 1998
- Research Assistant, University of Virginia, Curry School of Education. Summer 1996 - Spring 1998
- Head Athletic Trainer, St. Annes-Belfield School, Charlottesville, VA. August 1995 to June 1996.
- Assistant Athletic Trainer, Virginia Military Institute, Lexington, VA. August 1993 to August 1995.

ADMINISTRATIVE POSITIONS

- Chair, Dept of Kinesiology, North Carolina Agricultural and Technical State University, 2024- present
- Associate Chair, Dept of Kinesiology, University of North Carolina Greensboro. 2021- 2024
- Co-Director, UNCG Gateway MRI Center, University of North Carolina Greensboro. 2017- 2024
- Co-Director, Applied Neuromechanics Research Laboratory 2001 – 2024
- Establishing Program Director - CAAHEP accreditation of an entry-level master's athletic training education program. 1998-2003.

SCHOLARSHIP

Refereed Journal Publications

1. Schmitz RJ, Martin DE, Perrin DH, Iranmanesh A, & Rogol AD. Effect of interferential current on perceived pain and serum cortisol associated with delayed onset muscle soreness. *J Sport Rehab.* 1997; 6, 30-37.
2. Schmitz RJ & Arnold BL. Intertester and intratester reliability of a dynamic balance protocol using the bidex stability system. *J Sport Rehab.* 1998;7, 95-101.
3. Arnold BL, Schmitz RJ. Examination of balance measures produced by the bidex stability system. *J Athl Train.* Oct 1998;33(4):323-327.
4. Schmitz RJ, Arnold BL, Perrin DH, Granata KP, Gaesser GA, & Gansneder BM. Changes in the mechanical and electromyographic output during isotonic and isometric exercise in men and women. *Isokin and Exerc Sci.* 2000;8,119-127
5. Earl JE, Schmitz RJ, Arnold BL. Activation of the VMO and VL during dynamic mini-squat exercises with and without isometric hip adduction. *J Electromyogr Kinesiol.* Dec 2001;11(6):381-386.
6. Schmitz RJ, Westwood KC. Knee Extensor Electromyographic Activity-to-Work Ratio is Greater With Isotonic Than Isokinetic Contractions. *J Athl Train.* Dec 2001;36(4):384-387.
7. Schmitz, RJ, Riemann BL, & Thompson, TT (2002) Gluteus Medius Activity during Isometric Closed-Chain Hip Rotation. *J Sport Rehab.* 2002;11, 179-188.
8. Schmitz RJ, Arnold BL, Perrin DH, Granata KP, Gaesser GA, & Gansneder BM. Effect of isotonic and isometric knee extension exercises on mechanical and electromyographical specificity of fatigue. *Isokin and Exerc Sci.* 2002;10, 167-175.
9. Riemann BL, Schmitz RJ, Gale M, McCaw ST. Effect of ankle taping and bracing on vertical ground reaction forces during drop landings before and after treadmill jogging. *J Orthop Sports Phys Ther.* Dec 2002;32(12):628-635.
10. Schmitz RJ, Shultz SJ, Kulas AS, Windley TC, Perrin DH. Kinematic analysis of functional lower body perturbations. *Clin Biomech* (Bristol, Avon). Dec 2004;19(10):1032-1039.
11. Shultz SJ, Windley TC, Kulas AS, Schmitz RJ, Valovich McLeod TC, Perrin DH. Low levels of anterior tibial loading enhance knee extensor reflex response characteristics. *J Electromyogr Kinesiol.* Feb 2005;15(1):61-71.
12. Kulas, AS, Windley, TC, Schmitz RJ. Effects of Abdominal Postures on Lower Extremity Energetics During Single-Leg Landings. *J Sport Rehab.* 2005;14 (1), p58-71
13. Kulas AS, Schmitz RJ, Shultz SJ, Watson MA, Perrin DH. Energy absorption as a predictor of leg impedance in highly trained females. *J Appl Biomech.* Aug 2006;22(3):177-185.
14. Kulas AS, Schmitz RJ, Shultz SJ, Henning JM, Perrin DH. Sex-specific abdominal activation strategies during landing. *J Athl Train.* Oct-Dec 2006;41(4):381-386.
15. Shultz SJ, Shimokochi Y, Nguyen AD, Ambegaonkar JP, Schmitz RJ, Beynnon BD, Perrin DH. Nonweight-bearing anterior knee laxity is related to anterior tibial translation during transition from nonweight bearing to weight bearing. *J Orthop Res.* Mar 2006;24(3):516-523.

16. Schmitz RJ, Kulas AS, Perrin DH, Riemann BL, Shultz SJ. Sex differences in lower extremity biomechanics during single leg landings. *Clin Biomech* (Bristol, Avon). Jul 2007;22(6):681-688.
17. Shultz SJ, Shimokochi Y, Nguyen AD, Schmitz RJ, Beynnon BD, Perrin DH. Measurement of varus-valgus and internal-external rotational knee laxities in vivo--Part II: relationship with anterior-posterior and general joint laxity in males and females. *J Orthop Res*. Aug 2007;25(8):989-996.
18. Shultz SJ, Shimokochi Y, Nguyen AD, Schmitz RJ, Beynnon BD, Perrin DH. Measurement of varus-valgus and internal-external rotational knee laxities in vivo--Part I: assessment of measurement reliability and bilateral asymmetry. *J Orthop Res*. Aug 2007;25(8):981-988.
19. Hamilton RT, Shultz SJ, Schmitz RJ, Perrin DH. Triple-hop distance as a valid predictor of lower limb strength and power. *J Athl Train*. Apr-Jun 2008;43(2):144-151.
20. Schmitz RJ, Ficklin TK, Shimokochi Y, Nguyen AD, Beynnon BD, Perrin DH, Shultz SJ. Varus/valgus and internal/external torsional knee joint stiffness differs between sexes. *Am J Sports Med*. Jul 2008;36(7):1380-1388.
21. Shultz SJ, Nguyen AD, Schmitz RJ. Differences in lower extremity anatomical and postural characteristics in males and females between maturation groups. *J Orthop Sports Phys Ther*. Mar 2008;38(3):137-149.
22. Eaves T, Schmitz R, Siebel EJ. Prevalence of spit tobacco use and health effects awareness in baseball coaches. *J Calif Dent Assoc*. Jun 2009;37(6):403-410.
23. Schmitz RJ, Shultz SJ, Nguyen AD. Dynamic valgus alignment and functional strength in males and females during maturation. *J Athl Train*. Jan-Feb 2009;44(1):26-32.
24. Shimokochi Y, Yong Lee S, Shultz SJ, Schmitz RJ. The relationships among sagittal-plane lower extremity moments: implications for landing strategy in anterior cruciate ligament injury prevention. *J Athl Train*. Jan-Feb 2009;44(1):33-38.
25. Shultz SJ, Beynnon BD, Schmitz RJ. Sex differences in coupled knee motions during the transition from non-weight bearing to weight bearing. *J Orthop Res*. Jun 2009;27(6):717-723.
26. Shultz SJ, Nguyen AD, Leonard MD, Schmitz RJ. Thigh strength and activation as predictors of knee biomechanics during a drop jump task. *Med Sci Sports Exerc*. Apr 2009;41(4):857-866.
27. Shultz SJ, Schmitz RJ. Effects of transverse and frontal plane knee laxity on hip and knee neuromechanics during drop landings. *Am J Sports Med*. Sep 2009;37(9):1821-1830.
28. Shultz SJ, Schmitz RJ, Nguyen AD, Levine BJ. Joint laxity is related to lower extremity energetics during a drop jump landing. *Med Sci Sports Exerc*. Apr 2010;42(4):771-780.
29. Petschauer MA, Schmitz R, Gill DL. Helmet fit and cervical spine motion in collegiate men's lacrosse athletes secured to a spine board. *J Athl Train*. May-Jun 2010;45(3):215-221.
30. Schmitz RJ, Kim H, Shultz SJ. Effect of axial load on anterior tibial translation when transitioning from non-weight bearing to weight bearing. *Clin Biomech* (Bristol, Avon). Jan 2010;25(1):77-82.

31. Schmitz RJ, Shultz SJ. Contribution of knee flexor and extensor strength on sex-specific energy absorption and torsional joint stiffness during drop jumping. *J Athl Train.* Sep-Oct 2010;45(5):445-452.
32. Ambegaonkar JP, Shultz SJ, Perrin DH, Schmitz RJ, Ackerman TA, & Schulz MR. Lower body stiffness and muscle activity differences between female dancers and basketball players during drop jumps. *Sports Health.*, 2011;3(1) 89-96.
33. Nguyen AD, Shultz SJ, Schmitz RJ, Luecht RM, Perrin DH. A preliminary multifactorial approach describing the relationships among lower extremity alignment, hip muscle activation, and lower extremity joint excursion. *J Athl Train.* 2011;46(3):246-256.
34. Shultz SJ, Schmitz RJ, Beynnon BD. Variations in varus/valgus and internal/external rotational knee laxity and stiffness across the menstrual cycle. *J Orthop Res.* Mar 2011;29(3):318-325.
35. Shultz SJ, Schmitz RJ, Nguyen AD, Levine B, Kim H, Montgomery MM, Shimokochi Y, Beynnon BB, Perrin DH. Knee joint laxity and its cyclic variation influence tibiofemoral motion during weight acceptance. *Med Sci Sports Exerc.* Feb 2011;43(2):287-295.
36. Riemann BL & Schmitz RJ. The relationship between various modes of single leg postural control assessment. *Int J Sport Phys Ther.* June 2012;7(3):257-266.
37. Cone JR, Berry NT, Goldfarb AH, Henson, RA, Schmitz RJ, Wideman L, Shultz SJ. Effects of an individualized soccer match simulation on vertical stiffness and impedance. *J Strength Cond Res* 2012 Aug;26(8):2027-36.
38. Shultz SJ, Schmitz RJ, Tritsch AJ, Montgomery MM. Methodological considerations of task and shoe wear on joint energetics during landing. *J Electromyogr Kinesiol.* 2012 Feb;22(1):124-30.
39. Shultz SJ, Schmitz RJ, Kong Y, Dudley WN, Beynnon BD, Nguyen AD, Kim HS, Montgomery MM. Cyclic variations in multiplanar knee laxity influence landing biomechanics. *Med Sci Sports Exerc.* 2012 May;44(5):900-9.
40. Shultz SJ & Schmitz RJ. Tibial plateau geometry influences lower extremity biomechanics during landing. *Am J Sports Med.* Sep 2012;40(9):2029-2036. PMID: 22837428
41. Shultz SJ, Pye ML, Montgomery MM, Schmitz RJ. Associations between lower extremity muscle mass and multiplanar knee laxity and stiffness: a potential explanation for sex differences in frontal and transverse plane knee laxity. *Am J Sports Med.* 2012 Dec;40(12):2836-44.
42. Montgomery MM, Shultz SJ, Schmitz RJ, Wideman L, Henson RA. Influence of lean body mass and strength on landing energetics. *Med Sci Sports Exerc.* 2012 Dec;44(12):2376-83.
43. Schmitz RJ & Shultz, SJ. Changes in Anterior Knee Stiffness in Laxity Responders vs. Laxity Non-Responders Across the Menstrual Cycle. *J Athl Train.* 2013 48 (1), 39-46.
44. Schmitz RJ, Sauret JJ, Shultz SJ. Anterior tibiofemoral intersegmental forces during landing are predicted by passive restraint measures in women. *Knee.* 2013 20(60), 493-9
45. Shultz SJ, Schmitz RJ, Cone JR, Copple TJ, Montgomery MM, Pye MM, Tritsch AJ. Multiplanar Knee Laxity Increases during a 90-min Intermittent Exercise Protocol. *Med Sci Sports Exerc.* 2013 45(8), 1553-61

46. Schmitz RJ, Cone JC, Tritsch AJ, Pye ML, Montgomery MM, Henson RA, Shultz SJ. Changes in drop-jump landing biomechanics during prolonged intermittent exercise. *Sports Health* 2014; 6(2):128-35
47. Montgomery MM, Shultz SJ, Schmitz RJ. The effect of equalizing landing task demands on sex differences in lower extremity energy absorption. *Clin Biomech (Bristol, Avon)*. 2014 Aug;29(7):760-6.
48. Schmitz, R. J., Cone, J. C., Copple, T. J., Henson, R. A., & Shultz, S. J.. Lower extremity biomechanics and maintenance of vertical jump height during prolonged intermittent exercise. *Journal of Sport Rehabilitation*. 2014 Nov;23(4):319-29]
49. Schmitz RJ, Kim H, Shultz SJ. Neuromuscular fatigue and tibiofemoral joint biomechanics when transitioning from non-weight bearing to weight bearing. *J Athl Train*. 2015 Jan;50(1):23-9.
50. Shultz SJ, Schmitz RJ, Cone JR, Henson RA, Montgomery MM, Pye ML, Tritsch AJ. Changes in fatigue, multiplanar knee laxity, and landing biomechanics during intermittent exercise. I. 2015 May;50(5):486-97.
51. Nguyen, A. D., Schmitz, R. J., & Shultz, S. J. Landing Biomechanics Differ Among Defined Static Lower Extremity Alignment Postures. *J Athl Train*. 2015 May;50(5):486-97
52. Waxman JP, Schmitz RJ, Shultz SJ. The Inter-day Measurement Consistency of and Relationships Between Hamstring and Leg Musculo-articular Stiffness. *J Appl Biomech*.. 2015;31(5):340-348
53. Taylor JB, Wang HM, Schmitz RJ, Rhea CK, Ross SE, Shultz SJ. Multiplanar Knee Laxity and Perceived Function During Activities of Daily Living and Sport. *Journal of athletic training*. 2015;50(11):1199-1206.
54. Wang HM, Shultz SJ, Schmitz RJ. Association of Anterior Cruciate Ligament Width With Anterior Knee Laxity. *Journal of athletic training*. 2016;51(6):460-465.
55. Glass SM, Schmitz RJ, Rhea CK, Ross SE. Load-Enhanced Movement Quality Screening and Tactical Athleticism: An Extension of Evidence. *International journal of sports physical therapy*. 2017;12(3):408-416.
56. Montgomery MM, Tritsch AJ, Cone JR, Schmitz RJ, Henson RA, Shultz SJ. The Influence of Lower Extremity Lean Mass on Landing Biomechanics During Prolonged Exercise. *Journal of athletic training*. 2017;52(8):738-746.
57. Schmitz RJ, Harrison D, Wang HM, Shultz SJ. Sagittal-Plane Knee Moment During Gait and Knee Cartilage Thickness. *Journal of athletic training*. 2017;52(6):560-566.
58. Schmitz RJ, Kulas AS, Shultz SJ, Waxman JP, Wang HM, Kraft RA. Relationships of hamstring muscle volumes to lateral tibial slope. *The Knee*. 2017;24(6):1335-1341.
59. Schmitz RJ, Wang HM, Polprasert DR, Kraft RA, Pietrosimone BG. Evaluation of knee cartilage thickness: A comparison between ultrasound and magnetic resonance imaging methods. *The Knee*. 2017;24(2):217-223.
60. Taylor JB, Ford KR, Schmitz RJ, Ross SE, Ackerman TA, Shultz SJ. Biomechanical Differences of Multidirectional Jump Landings Among Female Basketball and Soccer Players. *Journal of strength and conditioning research*. 2017;31(11):3034-3045.
61. Taylor JB, Ford KR, Schmitz RJ, Ross SE, Ackerman TA, Shultz SJ. Biomechanical differences in female basketball and soccer players during multi-directional jump landings. *Journal of strength and conditioning research*. 2017.
62. Diekfuss JA, Rhea CK, Schmitz RJ, et al. The Influence of Attentional Focus on Balance Control over Seven Days of Training. *Journal of motor behavior*. 2018;1-12.

63. Harkey MS, Blackburn JT, Hackney AC, et al. Comprehensively Assessing the Acute Femoral Cartilage Response and Recovery after Walking and Drop-Landing: An Ultrasonographic Study. *Ultrasound in medicine & biology*. 2018;44(2):311-320.
64. Harkey MS, Blackburn JT, Hackney AC, Lewek MD, Schmitz RJ, Pietrosimone B. Acute Serum Cartilage Biomarker Response after Walking and Drop Landing. *Medicine and science in sports and exercise*. 2018;50(7):1465-1471.
65. Hogg JA, Schmitz RJ, Nguyen AD, Shultz SJ. Passive Hip Range-of-Motion Values Across Sex and Sport. *Journal of athletic training*. 2018;53(6):560-567.
66. Kulas AS, Schmitz RJ, Shultz SJ, et al. Bilateral quadriceps and hamstrings muscle volume asymmetries in healthy individuals. *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*. 2018;36(3):963-970.
67. Pfeiffer S, Harkey MS, Stanley LE, et al. Associations Between Slower Walking Speed and T1rho Magnetic Resonance Imaging of Femoral Cartilage Following Anterior Cruciate Ligament Reconstruction. *Arthritis care & research*. 2018;70(8):1132-1140.
68. Pfeiffer SJ, Spang J, Nissman D, et al. Gait Mechanics and T1rho MRI of Tibiofemoral Cartilage 6 Months Post ACL Reconstruction. *Medicine and science in sports and exercise*. 2018. – In Press
69. Pietrosimone B, Nissman D, Padua DA, et al. Associations between cartilage proteoglycan density and patient outcomes 12months following anterior cruciate ligament reconstruction. *The Knee*. 2018;25(1):118-129.
70. Pietrosimone B, Pfeiffer SJ, Harkey MS, et al. Quadriceps weakness associates with greater T1rho relaxation time in the medial femoral articular cartilage 6 months following anterior cruciate ligament reconstruction. *Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA*. 2018. – In Press
71. Taylor JB, Ford KR, Schmitz RJ, Ross SE, Ackerman TA, Shultz SJ. Sport-specific biomechanical responses to an ACL injury prevention programme: A randomised controlled trial. *Journal of sports sciences*. 2018;36(21):2492-2501.
72. Taylor JB, Ford KR, Schmitz RJ, Ross SE, Ackerman TA, Shultz SJ. A 6-week warm-up injury prevention programme results in minimal biomechanical changes during jump landings: a randomized controlled trial. *Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA*. 2018;26(10):2942-2951.
73. Schmitz RJ, Wang HM, Kraft RA, Shultz SJ, Ross SE, Henson RA, Perrin DH. Regional differences in anterior cruciate ligament imaging biomarkers: T2 and T2* values. *Muscle Ten Lig J*. 2018;8(2) 238-245
74. Wittstein MW, Starobin JM, Schmitz RJ, Shultz SJ, Haran FJ, Rhea CK. Cardiac and gait rhythms in healthy younger and older adults during treadmill walking tasks. *Aging clinical and experimental research*. 2018. – In Press
75. Wang HM, Shultz SJ, Kraft RA, Ross SE, Perrin DH, Schmitz, R. Sex Comparisons of In-Vivo ACL Morphometry. *Journal of athletic training*. 2018 *Journal of athletic training*, 54(5), 513-518
76. Pfeiffer, S. J., Spang, J., Nissman, D., Lalush, D., Wallace, K., Harkey, M. S., Pietrosimone, L. S., Schmitz, R., Schwartz, T., Blackburn, T., Pietrosimone, B. (2019). Gait Mechanics and T1ρ MRI of Tibiofemoral Cartilage 6 Months after ACL Reconstruction. *Medicine and science in sports and exercise*, 51(4), 630-639.

77. Wittstein, M. W., Starobin, J. M., Schmitz, R., Shultz, S. J., Haran, J., Rhea, C. K. (2019). Cardiac and Gait Rhythms in Healthy Younger and Older Adults during Treadmill Walking Tasks. *Aging Clinical and Experimental Research*, 31(3), 367-375.
78. Raisbeck, L. D., Grooms, D. R., Schmitz, R. J., Diekfuss, J. A. (in press). The Effects of Attentional Focus on Brain Function during a Gross Motor Task. *Journal of Sport Rehabilitation*.
79. Glass, S. M., Rhea, C. K., Schmitz, R., Ross, S. E. (2019). Potential mediators of load-related changes in movement complexity in young, healthy adults. *Journal of Athletic Training*, 54(1), 70-80.
80. Glass, S. M., Schmitz, R., Rhea, C. K., Ross, S. E. (2019). Potential Mediators of Load-Related Decreases in Movement Quality in Young, Healthy Adults. *Journal of Athletic Training*, 54(1), 81-89.
81. Diekfuss, J. A., Rhea, C. K., Schmitz, R., Grooms, D. R., Wilkins, R. W., Slutsky, A. B., Raisbeck, L. D. (2019). The Influence of Attentional Focus on Balance Control over Seven Days of Training. *Journal of motor behavior*, 51(3), 281-292.
82. Hogg, J. A., Vanrenterghem, J., Ackerman, T., Nguyen, A.-D., Ross, S. E., Schmitz, R., Shultz, S. J. (2020). Temporal kinematic differences throughout single and double-leg forward landings. *Journal of biomechanics*, 99, 109559.
83. Wang, H. M., Shultz, S. J., Ross, S. E., Henson, R. A., Perrin, D. H., Schmitz, R. (2020). ACL Size and Notch Width Between ACLR and Healthy Individuals: A Pilot Study. *Sports health*, 12(1), 61-65.
84. Shultz, S. J., Schmitz, R. (2020). Recent Advances in Prevention of Primary and Secondary Anterior Cruciate Ligament Injury: What Does the Future Hold for Optimizing Knee-Joint Function? *Kinesiology Review, Volume 9:(Issue1)*, 72-78
85. Park-Braswell, A., Shultz, S. J., Schmitz, R. (2021). A Magnetic Resonance Imaging-Compatible Device to Perform In-Vivo Anterior Knee Joint Loading. *Journal of Sport Rehabilitation*, 30(7), 1102-1105.
86. Wang, H.-M., Shultz, S. J., Ross, S. E., Henson, B., Perrin, D., Schmitz, R. (2021). The Relationship of ACL Volume and T2* Relaxation Times to Anterior Knee Laxity. *Orthopaedic Journal of Sports Medicine*. <https://doi.org/10.1177/2325967120979986>
87. Shultz, S. J., Rodriguez-Cruz, M., Casey, E., Dompier, T., Ford, K., Pietrosimone, B., Schmitz, R., Taylor, J. (2022). Sex-Specific Changes in Physical Risk Factors for Anterior Cruciate Ligament Injury by Chronological Age and Stages of Growth and Maturation From 8 to 18 Years of Age. *Journal of Athletic Training*, 57(9), 830-876.
88. Park, K., Grooms, D., Shultz, S. J., Raisbeck, L. D., Rhea, C. K., Schmitz, R. (2022). Sex-specific Brain Function during Single Leg Exercise. *International Journal of Sports Physical Therapy*, 17(7), 1249-1258. <https://pubmed.ncbi.nlm.nih.gov/36518825/>
89. Taylor, J. B., Wright, E. S., Waxman, J. P., Schmitz, R., Groves, J. D., Shultz, S. J. (2022). Ankle Dorsiflexion Range of Motion Impacts Hip and Knee Biomechanics during Drop Vertical Jump Landings in Active Females. *Journal of Sports Health*, 14(3), 328-335
90. Yamada, M., Lohse, K. R., Rhea, C. K., Schmitz, R., Raisbeck, L. D. (2022). Practice—Not Task Difficulty—Mediated the Focus of Attention Effect on a Speed-Accuracy Tradeoff Task. *Perceptual and motor skills*, 129(5), 1504-1524.
91. Shultz SJ, Schmitz RJ, Kulas AS, Labban JD, Wang HM. (2022) Quadriceps muscle volume positively contributes to ACL volume. *Journal of Orthopedic Research* ;40(1):268-276

92. Sugimoto YA, McKeon PO, Rhea CK, Schmitz RJ, Henson RA, Mattacola CG, Ross SE. (2024) Sensory Reweighting System Differences on Vestibular Feedback with Increased Task Constraints in Individuals with Chronic Ankle Instability Compared to Healthy Controls. (2023) *J Athl Train.* 2024 Jul 18. 59 (7), 713-723.
93. Park-Braswell, k., Shultz, SJ, Ross SE, Sunnassee D, Grooms DR Schmitz, RJ. (2024). The impact of differential knee laxity on brain activation during passive knee joint loading. *Journal of Orthopedic Research* 42 (1), 115-122.
94. Sugimoto YA, McKeon PO, Rhea CK, Schmitz RJ, Henson RA, Mattacola CG, Ross SE. (2024) Understanding the effects of a sudden directional shift in somatosensory feedback and increasing task complexity on postural adaptation in individuals with and without chronic ankle instability. *Gait & Posture* 109(March) 158-164.
95. Yamada, M., Lohse, K. R., Rhea, C. K., Schmitz, R., Raisbeck, L. D. (2024). Do attentional focus cues affect the type or number of explicit rules? Proof of concepts of the self-invoking trigger or explicit knowledge hypotheses *Psychology of Sport and Exercise* Vol 70

Non-Refereed Journal Publications

1. Shultz SJ, Schmitz RJ, Nguyen AD. Research Retreat IV: ACL injuries--the gender bias: April 3-5, 2008 Greensboro, NC. *J Athl Train.* Sep-Oct 2008;43(5):530-531.
2. Shultz SJ, Schmitz RJ, Nguyen AD, Chaudhari AM, Padua DA, Mclean SG, Sigward SM. ACL Research Retreat V: an update on ACL injury risk and prevention, March 25-27, 2010, Greensboro, NC. *J Athl Train.* Sep-Oct 2010;45(5):499-508.
3. Shultz SJ, Schmitz RJ, Benjamine A, Chaudhari AM, Collins M, Padua DA. ACL Research Retreat VI: An Update on ACL Injury Risk and Prevention. *J Athl Train.* 2012;47(5):591-603.
4. Shultz SJ, Schmitz RJ, Benjamine A, Collins M, Ford K, Kulas AS. ACL Research Retreat VII: An Update on Anterior Cruciate Ligament Injury Risk Factor Identification, Screening, and Prevention March 19-21, 2015; Greensboro, NC. *J Athl Train.* 2015;50(10):1076-1093.
5. Schmitz, R., Ford, K., Pietrosimone, B., Shultz, S. J., Taylor, J. (2022). ACL Research Retreat IX Summary Statement: The Pediatric Athlete. *Journal of Athletic Training*, 57(9), 990-995

Book Chapters

1. Shultz, S. J. & Schmitz, R. J. (2012). What we Know and Goals for Future Research, *ACL Injuries in the Female Athlete. Causes, Impacts and Conditioning Programs.* Springer-Verlag.
2. Shultz, S. J. & Schmitz, R. J. (2018). Current Understandings and Directions for Future Research, *ACL Injuries in the Female Athlete. Causes, Impacts and Conditioning Programs.* Springer-Verlag

Refereed Abstracts

1. Schmitz, R.J., Martin, D.E., Perrin, D.H., Iranmanesh, A., & Rogol, A.D. (1994). Effects of interferential current on perceived pain and serum cortisol in a delayed onset muscle soreness model. *Journal of Athletic Training*, 29, 171.
2. Arnold, B.A. & Schmitz, R.J. (1997). Normal stability patterns and relationships as assessed with the biodex balance system. *Journal of Athletic Training*, 32, S-25.
3. Schmitz, R.J. & Arnold, B.A. (1997). Intertester and intratester reliability of the Bidex Stability System. *Journal of Athletic Training*, 32, S-41.
4. Schmitz R.J. & Arnold, B.A. (1998). The effect of eccentric exercise on peak power production of the knee extensors and the resulting EMG signal. *Journal of Athletic Training*, 33, S-77.
5. Bauer, A.M., Webright, W.G., Arnold, B.L., Schmitz, R.J., & Gansneder, B.G. (1999). Comparison of weight bearing and non-weight bearing gluteus medius EMG during an isometric hip adduction. *Journal of Athletic Training*, 34, S-58.
6. Earl, J.E., Schmitz, R.J., Arnold, B.L., & Gansneder, B.M. (1999). VMO and VL activation during a mini-squat exercise with and without hip adduction. *Journal of Athletic Training*, 34, S-57.
7. Schmitz, R.J., Arnold, B.L., Perrin, D.H., Granata, K.P., Gaesser, G.A., & Gansneder, B.M. (1999). Effect of isotonic and isometric knee extension exercises on mechanical and electromyographical specificity of fatigue. *Journal of Athletic Training*, 34, S-59.
8. Schmitz, R.J., Arnold, B.L., Perrin, D.H., Granata, K.P., Gaesser, G.A., & Gansneder, B.M. (1999). Changes in mechanical output and electromyography following fatiguing isotonic and isometric knee extension in men and women. *Medicine & Science in Sports & Exercise*, 31, S168.
9. Schmitz, R.J. & Westwood K.C. (2000). Motor unit recruitment differences in isotonic and isokinetic contractions of the knee extensors. *Journal of Athletic Training*, 35, S-31.
10. Schmitz RJ & Westwood KC (2001) Fatigue breakpoint of concentric isokinetic knee exercise and its relationship to the mechanomyographic signal. *Medicine & Science in Sports & Exercise*, 33, S262.
11. Riemann BL, Schmitz RJ Gale MJ, & McCaw ST (2001). Combined effects of ankle tape, ankle orthosis and exercise on vertical ground reaction forces during drop landings. *Medicine & Science in Sports & Exercise*, 33, S43.
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GRANTS & CONTRACTS

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- Schmitz, R.J. (1998) Summer Excellence Research Award, University of North Carolina Greensboro, Efficiency of Isokinetic and Isotonic Exercise Protocols for Motor Unit Recruitment, \$4,000. (*unfunded*)
- Guskiewicz, K.M. & Schmitz, R.J. (1999) Development of a Law Enforcement Physical Aptitude Test, The North Carolina Department of Justice, (*funded - \$12,600*).
- Schmitz, R.J., Goldfarb, A.H., Shipp, J.R. (2000) The Role of Beta-Endorphin in the Modulation of DOMS Pain during Low Frequency Transcutaneous Electrical Nerve Stimulation, \$2000. NATA District 3 - (*unfunded*)
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- Schmitz, R.J. and Henning JM (Co- Principal Investigator) Prospective Study of Injury Risk Factors in Collegiate Athletes. UNCG Faculty Grant \$10000 (*\$5000 funded*)

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- Schmitz, R. J. & Shultz, S. J. (2012), ACL Research Retreat 2012, North Carolina Biotechnology Center. \$2,500.00 *funded*
- Shultz SJ, Heinrich VC, & Schmitz RJ. (2012) Collagen-related Genetic Pathways to ACL Injury National Institute of Arthritis & Musculoskeletal & Skin Diseases (NIAMS). 20% Effort. . – (*not funded*).
- Schmitz, R. J. (PI), Kraft, R., Shultz, S. J. , & Henson, R. H., Biomechanical Factors in Knee Cartilage Health, GOV-National Institute of Arthritis & Musculoskeletal & Skin Diseases (NIAMS). Oct 2014 Scored - 38 Impact Score; 29th percentile. \$433,740 *Not Funded*
- Schmitz, R. J. (PI), Kraft, R., Shultz, S. J. , & Henson, R. H., Resubmission: Biomechanical Factors in Knee Cartilage Health, GOV-National Institute of Arthritis & Musculoskeletal & Skin Diseases (NIAMS). July 2015 Scored - 39 Impact Score; 29th percentile. \$432,674 - *Not Funded*
- Schmitz, R. J. & Shultz, S. J. (2015), ACL Research Retreat 2012, North Carolina Biotechnology Center. \$3000.00 *funded*
- Schmitz, R. J. (PI), Kraft, R., Shultz, S. J. , & Henson, R. H., A Multivariate Clinical Biomechanical Model to Prospectively Identify Early Cartilage Degeneration in the ACL-Reconstructed Patient, Principal Investigator, GOV-National Institute of Arthritis & Musculoskeletal & Skin Diseases (NIAMS). Feb 2016 Scored - 37 Impact Score; 26th percentile. \$438,399 *Not Funded*
- Schmitz, R. J. (PI), Kraft, R., Shultz, S. J. , & Henson, R. H., Resubmission: A Multivariate Clinical Biomechanical Model to Prospectively Identify Early Cartilage Degeneration in the ACL-Reconstructed Patient, Principal Investigator, GOV-National Institute of Arthritis & Musculoskeletal & Skin Diseases (NIAMS). Oct 2016 Scored - 41 Impact Score; 33th percentile. \$438,399 *Not Funded*

- Pietrosimone B, Schmitz RJ (Co-PI), Zong X, Nissman D. Developing Novel Methods for Early Detection of Knee Osteoarthritis in North Carolina. UNC InterInstitutional Planning Grant, 4/18 Selected to move forward from UNC CH (top 4 selected) \$75,000 - *not funded*
- Schmitz RJ (PI), Pietrosimone B, Zong X, Nissman D. Establishing Multi-Center Ability to Collect Novel MRI Measures Associated with Early Detection of Knee Osteoarthritis. UNC Inter Institutional Planning Grant preproposal, 3/18 - \$75,000 – *Not funded*.
- Schmitz RJ (PI), Raisbeck LD, Rhea CK, Wilkins RA, Shultz SJ. Neural Correlates of Effective Motor Transference following Attentionally Focused Neuromuscular Intervention. UNCG Office of Research Strategic Seed Grant. Feb 17 – Dec 18 \$15K – *funded*
- Kamjoo P(PI), Schmitz, R.J (consultant), "Wearable ACL Sensors and Feedback: A Quantitative Real-Time Assessment and Enhanced Biomechanics Training Device to Reduce Injury Risk," SBIR, Sponsored by NIH 2019 – *Not funded*
- Shultz SJ (PI) & Schmitz RJ. Triaxial knee laxity measurement solutions. Strategic Seed Grant – UNCG Office of Research and Economic Development. \$25k - funded 1/18 - 6/19
- Schmitz, RJ (co-PI) & Shultz, SJ (co-PI) ACL Research Retreat 2019, March 2019 North Carolina Biotechnology Center. \$7,500 *funded*.
- Shultz SJ (PI), Widman L, Maher J, Laban J, Taylor J, Cone J, Schmitz RJ, Messier SJ- Resistive Exercise for the Anterior Cruciate Ligament (REP-ACL). National Institute of Arthritis & Musculoskeletal & Skin Diseases (NIAMS). Submitted 2/2019 – Not funded.
- Shultz SJ (PI) & Schmitz RJ (coI). Early Prototype Development and Optimization of a Clinical Knee Arthrometer NCBC Biotechnology Innovation (BIG) Grant 07/01/2018 – 08/31/2020 - \$106,400.00-*funded*
- Park K. (Principal), Schmitz, R. J. (Principal), "The impact of differential knee laxity on brain function during knee joint loading.,," National Athletic Trainers' Association , \$2,500.00. 2019 *Funded*
- Shultz, S. J. (Principal), Schmitz, R. (Co-Investigator), "Tri-Axial Knee Laxity Measurement Solutions," Sponsored by UNCG Giant Steps Grant, The University of North Carolina at Greensboro, \$25,000.00. (January 18, 2018 - June 30, 2020). *Funded*
- Schmitz, R. J. (Co-Principal), Shultz, S. J. (Co-Principal), "A Measurement Solution for Assessing Anterior-Posterior Tibial Motion during Arthrometer Testing," Safrit Award UNCG Department of Kinesiology, \$8,000.00. (April 1, 2020 -December 30, 2021). *Funded*
- Schmitz, RJ (Co-Principal), Shultz, S. J. (Co-Principal), Kim, M. (Co-Investigator), Koshinskie, R. (Project Manager or Study Coordinator), Cameron, K., Taylor, J., "Optimization of a Precision Measurement Solution for a Tri-Axial Knee Arthrometer," Sponsored by North Carolina Biotechnology Center, State, \$106,400.00. (March 1, 2021 - March 31, 2023). *Funded*
- Shultz, S. J. (Co-Principal), Schmitz, RJ (Co-Principal), "Design and Development of Commercial Ready Instrumented Knee Arthrometer," Sponsored by NC IDEA –Next Steps Grant, The University of North Carolina at Greensboro, \$5,000.00. (March 29, 2022 - September 30, 2022). *Funded*
- Schmitz RJ (PI), Shultz SJ (Co-I). Clinical Knee Arthrometer Device Design and integrated Software Platform Development. National Football League Player Health and Safety Department \$297,000 (2023) – *Not funded*
- Shultz SJ (PI), Schmitz RJ (Co-I), Wideman L, Dollar J, Shriver L, Sun J. The Impact of Body Composition, Estrogen Exposure and Chronic Inflammation on ACL Development in Perimenarcheal Females. R01 - NIH (submitted July 2023) *not funded*)

- Shultz SJ (PI), Schmitz RJ (Co-I),. ACL STORMS (Study of Timing and Outcomes of injury Relative to Maturity Status). R01 - NIH (submitted Oct 2023) *not funded*
- Schmitz, RJ (Co-Principal), Shultz, SJ (Co-Principal), , "Phase 1 Mechanical Prototyping a Clinical Knee Arthrometer, NC Innovation, \$407,000. (Submitted March 2024). – *Not funded*
- Schmitz, RJ (Co-PI), Shultz, SJ (Co-PI), , "Phase 1 Clinical Knee Arthrometer, NC Innovation, \$582,000. (7/25-6/27). –*Funded*
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INTELLECTUAL PROPERTY

- US Patent 12285273. Multi-axial joint laxity testing apparatus and method. SJ Shultz, RJ Schmitz, JA Coppock, S Seyedin; granted 04/29/2025

INVITED TALKS

- Establishing a Disordered Eating Response Team Minicourse - Moderator. NATA Annual Meeting and Clinical Symposia, June 1999.
- Functional Implications of Instrumented Dynamometry: Concerns and Questions. Pennsylvania State University Department of Kinesiology Graduate Colloquium. March 2000.
- Diabetic Emergencies. Pennsylvania State University Department of Kinesiology Student Athletic Trainer Club. March 2000
- Clinical Implications of Biodex Testing. Lock Haven University Sports Medicine Conference. March 2000.
- Free Communication Slide Presentations on EMG - Moderator. NATA Annual Meeting and Clinical Symposia, July 2000.
- Differential Diagnosis for Athletes with Chronic Hip Symposia - Moderator. NATA Annual Meeting and Clinical Symposia, July 2000.
- Training and Rehabilitation considerations of Open Versus Closed Chain Exercise in the Lower Extremity - Moderator, NATA Annual Meeting and Clinical Symposia, June 2001
- Nutrition and Weight Loss in Wrestlers - Forsyth Country Day School, November 2001.
- Researchers' Forum: Quantification of Muscle Function - Instrumented Dynamometry - NATA Annual Meeting and Clinical Symposia, June 2002
- Hydration Issues in Secondary School Athletes - Randolph Hospital Sports Medicine Conference, August 2002
- Choosing Proper Footwear - UNCG Campus Recreation, September 2002
- Sacroiliac Assessment - Moderator. NATA Annual Meeting and Clinical Symposia, June 2003
- Pediatric Knee Exam - Moderator. NATA Annual Meeting and Clinical Symposia, June 2003
- Implications of hip weakness on distal function, University of Virginia - Art and Science of Sports Medicine, , Charlottesville, Virginia June 2006
- ACL Retreat, Discussant – Biomechanical Considerations of Anatomy, Lexington, Kentucky April 2006

- Mountain Bike Injuries – NATA Annual Meeting and Symposia Workshop. San Antonio, TX June 2009
- Connecting Academic and Intercollegiate Athletic Training. Penn State University Dec 2011.
- Research in Society Presentation, Human Movement Science Research Symposium, Chapel Hill, North Carolina. February 2012
- Road Cycling Injuries – NATA Annual Meeting and Symposia Workshop. St Louis MO, June 2012

PROFESSIONAL SERVICE

- Editorial Assistant for the Journal of Athletic Training. Responsible for C.E.U. quiz and organization of the New Products section. August 1996 to August 1998.
- Ad Hoc Manuscript Reviewer
 - American Journal of Sports Medicine
 - Clinical Biomechanics
 - Journal of Applied Biomechanics
 - Journal of Athletic Training
 - Journal of Biomechanics
 - Journal of Biomedical Engineering
 - Journal of Orthopaedic Research
 - Journal of Sport Rehabilitation
 - Medicine and Science in Sports and Exercise
 - Perceptual and Motor Skills
 - Research Quarterly for Exercise and Sport
 - Sports Biomechanics
 - Sports Health
 - Knee
 - Muscle Tendon and Ligament Journal
- National Athletic Trainers' Association Convention Program Committee (2003-2006)
- Editorial Board – Journal of Athletic Training (2006-2020)
- Editorial Board – Journal of Sports Medicine (2012-2015)

UNIVERSITY SERVICE

- IRB Member (2005-present)
- University-wide pre physical therapy advisor (2012-present)
- Research Excellence Awards Review Committee (2021)
- Faculty Senate (2022-2023)

TEACHING EXPERIENCE

University of Virginia 1996-1998

Undergraduate:

- EDHS 353 – Human Anatomy

- EDHS 451 – Emergency Medical Care
- EDHS- 358 - Cadaver Anatomy

University of North Carolina at Greensboro 1998-2024

Undergraduate:

- KIN 291 – Human Anatomy
- KIN 353 - Injuries and Illnesses in Physical Activity
- KIN 390- Prevention and Emergency Care of Athletic Injuries
- KIN 391 – Athletic Training Clinical Education I
- KIN 376 – Biomechanics of Sport and Physical Activity
- KIN 441 - – Athletic Training Clinical Education II

Graduate:

- KIN 638 – Therapeutic Modalities
- KIN 639 – Therapeutic Modalities Laboratory
- KIN 640 – Orthopedic Rehabilitation
- KIN 641 – Orthopedic Rehabilitation Laboratory
- KIN 643 – Clinical Biomechanics
- KIN 697 – Athletic Training Student Field Practicum
- KIN 725 – Organization and Administration of Athletic Training
- KIN 730 – Neural Bases of Motor Control

North Carolina Agricultural and Technical State University 2024-Present

Undergraduate:

- KINS 130 – Introduction to Kinesiology
- KIN 345 - Biomechanics

PROFESSIONAL MEMBERSHIPS/CERTIFICATIONS

- Member of the National Athletic Trainers' Association, 1990 to present. NATA-BOC Certification Number 069202436.

AWARDS

- Richard E. Vandervoort Memorial Scholarship Award, National Athletic Trainers' Association, June 1996.
- Mosaic Technologies Award - Curry School of Education, May 1998
- Graduate Teaching Assistant Award - Curry School of Education, May 1998
- Faculty advisor of NATA Outstanding M.S. student Poster Presentation, June 2004
- Fellow – National Athletic Trainers' Association, June 2016
- Established Career Abstract Award - National Athletic Trainers' Association, June 2020