

12/23/16

Principal Investigator/Program Director (Messier, Stephen P.):

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
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NAME Messier, Stephen P	POSITION TITLE Professor		
eRA COMMONS USER NAME MESSIER			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Rhode Island	B.S.	1972	Civil Engineering
University of Rhode Island	M.S.	1975	Physical Education
Temple University	Ph.D.	1981	Biomechanics

A. Personal Statement (OA)

Dr. Messier is Professor and Director of the J.B Snow Biomechanics Laboratory at Wake Forest University. He has been at Wake Forest for 35 years and has 26 years of experience in clinical trials research specifically related to knee osteoarthritis. He has published 91 original manuscripts including 20 over the past 5 years. He and his OA research team are well known for their work on the effects of exercise and weight loss on gait, strength, function, and pain in knee OA. He was the co-principal investigator of the Fitness Arthritis in Seniors Trial (FAST), the principal investigator of the Arthritis Diet and Activity Promotion Trial (ADAPT), and the Intensive Diet and Exercise for Arthritis (IDEA) study, and currently is the principal investigator of the Strength Training for Arthritis Trial (START), in which his research team will recruit 372 older adults with knee osteoarthritis for an 18-month intensive strength training intervention study, and the Weight loss and Exercise for Communities with Arthritis in North Carolina (WE-CAN), a pragmatic randomized clinical trial designed to determine if the diet and exercise intervention implemented in IDEA can be successfully implemented in diverse community settings. Each of these studies has been funded with grants from the National Institutes of Health.

B. Positions and Honors

Positions and Employment

1980 - 1981	The University of Texas - Austin, TX. Instructor.
1981 - 1986	Wake Forest University - Winston-Salem, NC. Assistant Professor
1984- 1986	University of North Carolina at Greensboro, Greensboro, NC. Adjunct Professor
1986 - 1992	Wake Forest University - Winston-Salem, NC. Associate Professor
1988- Present	Wake Forest University- Winston-Salem, NC. Director, Wake Forest Runners' Clinic
1992 - Present	Wake Forest University - Winston-Salem, NC. Professor
2010- Present	Adjunct Professor, Department of Internal Medicine, Section on Gerontology and Geriatric Medicine, Wake Forest University School of Medicine
2012- Present	Adjunct Professor, Center for Biomolecular Imaging, Wake Forest University School of Medicine
2012- Present	Adjunct Professor, Department of Internal Medicine, Section on Rheumatology and Immunology, Wake Forest University School of Medicine

Honors and Awards

Awards and Achievements

Career Achievement Award: Biomechanics Interest Group, American College Sports Medicine, 2009
 Arthritis Foundation: Top ten advances in arthritis research for the year 2004.
 Southeast American College of Sports Medicine 1999 Henry J. Montoye Scholar Award
 Stevens Visiting Professor Award, University of Florida, 2002.
 Fellow, American College of Sports Medicine
 Wright Family Faculty Fellow, Wake Forest University, 2008-2010
 Scientific Advisory Committee-Shape Up America-2009-present

Osteoarthritis Research Society International (OARSI)

Board of Directors, 2014-2018.
 OARSI Clinical Guidelines Committee: Chair, non-pharmacologic interventions. 2013-2014.
 OARSI-FDA-OA Initiative, Prevention/Risk Reduction Working Group
 Osteoarthritis Action Alliance-vice chair group 5-prevent onset of OA

American College of Sports Medicine

Board of Trustees, American College of Sports Medicine., 1992-1995
 Vice President, American College of Sports Medicine., 1996-1998
 President, Southeast American College of Sports Medicine., 1989-1991

Editorial Boards:

Osteoarthritis and Cartilage. 2008-present
Medicine and Science in Sports and Exercise 2012-present
The Open Sports Medicine Journal. 2007-present
Research in Sports Medicine 1991-present
Journal of Nutritional Disorders and Therapy 2011-present
Journal of Clinical Trials 2011-present
Open Journal of Rheumatology and Autoimmune Diseases 2011-present
BMC Musculoskeletal Disorders 2011-present

National Institutes of Health and Department of Defense

NIAMS-Clinical Trial Review Committee Study Section (AMSC)- Standing member 2015-present
 Musculoskeletal Rehabilitation Sciences, 2002-present. Temporary Member
 Arthritis, Connective Tissue, and Skin, 2009-present. Temporary Member
 NIAMS Ancillary Clinical Studies Special Emphasis Panels, 2009-present
 NIAMS Roundtable on Enhancing Clinical Trials in Orthopaedics and Osteoarthritis, Dec 14, 2009.
 Peer Review: US Army Medical Research and Materiel Command. 2010-2011
 Peer Reviewer: Peer Reviewed Medical Research Program (PRMRP):Post-traumatic OA. 2016

C. Peer reviewed publications (in chronological order)

1. **Messier**, S. P., and Owen, M. G. Bat dynamics of female fast pitch softball batters
Research Quarterly for Exercise and Sport, 1984; 55: 2, 141-145.
2. **Messier**, S. P., and Owen, M. G. Mechanics of batting: Analysis of ground reaction forces and selected lower extremity kinematics. *Research Quarterly for Exercise and Sport*, 1985; 56:2. 138-143.
3. **Messier**, S. P., and Dill, M. E. Alterations in strength and maximum oxygen consumption consequent to Nautilus circuit weight training. *Research Quarterly for Exercise and Sport*, 1985; 56: 4. 345-351.
4. **Messier**, S. P., and Owen, M. G. Mechanics of batting: Effect of stride technique on ground reaction forces and bat velocities. *Research Quarterly for Exercise and Sport*, 1986; 57: 4. 329-333.
5. **Messier**, S. P., Franke, W. D., and Rejeski, W. J. Effects of altered stride lengths on ratings of perceived exertion in experienced runners. *Research Quarterly for Exercise and Sport*, 1986; 57: 4. 273-279.
6. **Messier**, S. P., and Brody, M. A. Mechanics of translation and rotation during conventional and handspring soccer throw-ins." *International Journal of Sport Biomechanics*, 1986; 2: 301-315.

7. Kenney, E. A., Rejeski, W. J., and **Messier**, S. P. Managing exercise distress: the effect of broad spectrum intervention on effect, rpe, and running efficiency. *Canadian Journal of Applied Sports Science*, 1987; 12: 97-105.
8. **Messier**, S. P. and Pittala, K. A. Etiologic factors associated with selected running injuries. *Medicine and Science in Sports and Exercise*, 1988; 20: 501-505.
9. **Messier**, S. P. Biomechanics of fitness exercise modalities. In *ACSM Guidelines for Exercise Testing and Training: Reference Manual*. (edited by R.R.Pate). Lea & Febiger: Philadelphia, pp 24-37. 1988.
10. Satern, M., and **Messier**, S. P. Effects of ball size and basket height on the mechanics of the mechanics of the basketball free throw. *Journal of Human Movement Studies*, 1989; 16: 123-137.
11. Weyrich, A. S., **Messier**, S. P., Ruhmann, B. S., and Berry, M. J. Effects of bat composition, grip firmness, and impact location on post-impact ball dynamics. *Medicine and Science in Sports and Exercise*, 1989; 21: 199-205.
12. **Messier**, S. P., and Cirillo, K. J. Effects of a verbal and visual feedback system on running technique, perceived exertion, and running economy in female novice runners. *Journal of Sports Sciences*. 1989; 7: 113-126.
13. Bailey, S.P., and **Messier**, S.P. Variations in stride length and running economy in male novice runners subsequent to a seven week training program. *International Journal of Sports Medicine*. 1991; 12:299-304.
14. **Messier**, S.P., Davis, S., Curl, W.W., Lowery, R., and Pack, R. Etiologic factors associated with patellofemoral pain in runners. *Medicine and Science in Sports and Exercise*. 1991; 23:1008-15.
15. **Messier**, S.P., Loeser, R., Hoover, J., Semble, E., and Wise, C.C. Effects of osteoarthritis of the knee on gait, strength, and flexibility. *Archives of Physical Medicine and Rehabilitation*. 1992; 73:29-36.
16. Hall, S.J., and **Messier**, S. P. Biomechanics of fitness exercises . In *ACSM Guidelines for Exercise Testing and Training: Reference Manual*. (2nd Edition). Lea & Febiger: Philadelphia, 1993.
17. **Messier**, S. P., Davies, A. B., Moore, D.T., Davis, S.E., Pack, R.J., Kazmar, S. Severe obesity: effects on foot mechanics during walking. *Foot and Ankle*. 1994; 15:29-34.
18. **Messier**, S.P. Osteoarthritis of the knee and its associated factors of age and obesity. *Medicine and Science in Sports and Exercise*. 1994; 26:1446-1452.
19. **Messier**, S.P. Osteoarthritis of the knee:an interdisciplinary perspective. *Medicine and Science in Sports and Exercise*. 1994; 26:1427-1428.
20. **Messier**, S.P., Edwards, D.G., Martin, D.F., Lowery, R.B., Cannon, D.W., James, M.K., Curl, W.W., Read, H.M., and Hunter, D.M. Etiology of iliotibial band friction syndrome in distance runners. *Medicine and Science in Sports and Exercise*. 1995; 27: 966-975.
21. **Messier**, S. P., Ettinger, W.H., Doyle, T.E., Morgan, T., James, M.K., O'Toole, M.L., and Burns, R. Obesity: effects on gait in an osteoarthritic population. *Journal of Applied Biomechanics*, 1996; 12: 161-172.
22. Ettinger, W.H., Burns, R., **Messier**, S.P., Appelgate, W., Rejeski, W.J., Morgan, T. et al. A randomized trial comparing aerobic exercise and resistance exercise to a health education program on physical disability in older people with knee osteoarthritis: The fitness' arthritis' and seniors trial (FAST). *Journal of the American Medical Association*. 1997; 227:25-31.
23. **Messier**, S.P., Thompson, C.D., and Ettinger, W.H. Effects of long-term aerobic or weight training regimens on gait in an older, osteoarthritic population. *Journal of Applied Biomechanics*. 1997; 13:205-225.
24. Martin, K.A., Rejeski, W.J., Miller, M.E., James, M.K., Ettinger, W.H., and **Messier**, S.P. Validation of the PASE in older adults with knee pain and physical disability. *Medicine and Science in Sports and Exercise*, 1998; 31: 627-633.
25. Woodard, C.M., James, M.K and **Messier**, S.P. Computational methods used in the determination of loading rate: experimental and clinical implications. *Journal of Applied Biomechanics*. 1999; 15: 404-417.
26. McCrory, J.L., Martin, D., Lowery, R.B., Cannon, D.W., Curl, W.W., Read Jr., H.M., Hunter, D.M., Craven, T., and **Messier**, S.P. Etiologic factors associated with Achilles tendinitis in runners. *Medicine and Science in Sports and Exercise*. 1999; 31: 1374-1381.

27. **Messier**, S.P., Royer, T.D., Craven, T.E., O'Toole, M.L., Burns, R., and Ettinger, W.H. Long-term exercise and its effect on balance in older, osteoarthritic adults: results from the Fitness, Arthritis, and Seniors Trial (FAST). *Journal of the American Geriatrics Society*. 2000; 48:131-138.
28. Duffey, M., Martin, D., Cannon, DW, Craven, T., and **Messier**, S.P. Etiologic factors associated with anterior knee pain in runners. *Medicine and Science in Sports and Exercise*. 2000; 32:1825-1832.
29. **Messier**, S.P., Loeser, R.F., Valle, G., Mitchell, M.N., Morgan, T.P., Rejeski, W.J., and Ettinger, W.H. Exercise and weight loss in obese older adults with knee osteoarthritis: a preliminary study. *Journal of the American Geriatrics Society*. 2000; 48:1062-1072.
30. Jadelis, K., Miller, ME, Ettinger, W.H., **Messier**, S.P. Strength, balance, and the modifying effects of obesity and knee pain: results from the observational arthritis study in seniors (OASIS). *Journal of the American Geriatrics Society*. 2001; 49:884-891.
31. Miller, ME, Rejeski, WJ, **Messier**, SP, and Loeser, RF. Modifiers of change in physical disability in older adults with knee pain. The observational arthritis study in seniors (OASIS). *Arthritis Care and Research*. 2001; 45:331-339.
32. Pennix, B.W.J.H., **Messier**, SP., Rejeski, WJ, Williamson, J.D, DiBari, M., Cavazzini, C., Applegate, W.B., Pahor, M. Physical exercise and the prevention of disability in older persons with osteoarthritis. *Archives of Internal Medicine*. 2001; 161:2309-2316.
33. Rejeski, WJ, Miller, ME, Foy, C., **Messier**, SP, Rapp, S. Self-efficacy and the progression of functional limitations and self-reported disability in older adults with knee pain. *J. Gerontol B Psychol Sci Soc Sci*. 2001; 56:S261-265.
34. **Messier**, SP, Glasser JL, Ettinger Jr., WH, Miller, ME. Declines in strength and balance in older adults with chronic knee pain: a 30-month longitudinal, observational study. *Arthritis Care and Research*. 2002; 47:141-148.
35. Rejeski, WJ, Focht, BC, **Messier**, SP, Morgan, T, Pahor, M, Pennix, B. Obese older adults with knee osteoarthritis: weight loss, exercise, and quality of life. *Health Psychology*. 2002; 5: 419-426.
36. Marsh, AP, Rejeski, WJ, Miller, ME, **Messier**, SP, Lang, W. Baseline balance as a predictor of functional decline in older adults with knee oa: the observational arthritis study in seniors. *Journal of the American Geriatrics Society*. 2003; 51: 331-339.
37. Miller, GD, Rejeski, WJ, Williamson, JD, Morgan, T, Sevick, MA, Ettinger, WH, **Messier**, SP. The Arthritis, Diet, and Activity Promotion Trial (ADAPT): Design, Rationale, and Baseline Results. *Controlled Clinical Trials*. 2003; 24: 462-480.
38. Nicklas, BJ, Ambrosius, W, **Messier**, SP, Miller, GD, Pennix, BWJH, Loeser, RF, Palla, S, Bleecker, E, Pahor, M. Dietary-induced weight loss, exercise and chronic inflammation in older, obese adults: A randomized controlled clinical trial. *American Journal of Clinical Nutrition*. 2004; 79:544-551.
39. **Messier**, SP., Loeser, RF., Miller, GD., Morgan, T., Rejeski, WE., Sevick, MA. Pahor, M., Ettinger, WJ, Williamson, J. Exercise and weight loss in overweight and obese older adults with knee osteoarthritis: the arthritis, diet, and activity promotion trial (ADAPT). *Arthritis and Rheumatism*. 2004; 50:1501-1510.
40. **Messier** SP, DeVita P, Cowan RE, Seay J, Young HC, Marsh AP. Do older adults with knee osteoarthritis place greater loads on the knee during gait? A preliminary study. *Arch Phys Med Rehabil*. 2005; 86:703-709.
41. Penninx, BWJH, Abbas H, Ambrosius W, Nicklas BJ, Davis C, **Messier** SP, Pahor M. Inflammatory markers and physical function among overweight and obese older adults with osteoarthritis. *J Rheum*. 2004; 31:2027-2031.
42. **Messier**, SP. Arthritic Diseases and Conditions. In: ACSM's resource manual for guidelines for exercise testing and prescription. 5th edition. Lippincott, Williams & Wilkins. Baltimore. 2005.
43. van Gool, CH, Penninx, BWJH, Kempen, GIJM, Rejeski, WJ, Miller, GD, vanEijk, JTM, Pahor, M, **Messier**, SP. Effects of exercise adherence on osteoarthritis related performance and disability. *Arthritis Care Research*. 2005;53:24-32.
44. Miller, GD, Nicklas, BJ, Loeser, RF, Ambrosius, W, Davis, C, **Messier**, SP. Is serum leptin related to physical function and is it modifiable through weight loss and exercise in older adults with knee osteoarthritis? *Int. J. Obesity*. 2004;28:1383-1390.

45. Nicklas, BJ, Mychaleckyl, J, Kritchevsky, S, Palla, S, Lange, L, Lange, E, **Messier**, SP, Bowden, D, Pahor, M. Physical function and its response to exercise: associations with cytokine gene variation in older adults with knee osteoarthritis. *J Gerontol. Med Sci.* 2005 Oct;60(10):1292-8.
46. **Messier**, SP, Gutekunst, DJ, Davis, C, and DeVita, P. Weight loss reduces knee-joint loads in overweight and obese older adults with knee osteoarthritis. *Arthritis and Rheumatism.* 2005; 52: 2026-2032.
47. Foy, CG, Pennix, BWJH, Shumaker, S, **Messier**, SP, Pahor, M. Long-Term Exercise Therapy Resolves Ethnic Differences In Baseline Health Status Among Older Adults With Knee Osteoarthritis. *J Am Geriatr Soc.* 2005 Sep;53(9):1469-75
48. Focht, BC, Rejeski, WJ, Ambrosius, WT, Katula, JA, **Messier**, SP. Exercise, self-efficacy, and mobility performance in overweight and obese older adults with knee osteoarthritis. *Arthritis Care Research.* 2005;53:659-665.
49. van Gool CH, Penninx BW, Kempen GI, Miller GD, van Eijk JT, Pahor M, **Messier** SP. Determinants of high and low attendance to diet and exercise interventions among overweight and obese older adults. Results from the Arthritis, Diet and Activity Promotion Trial. *Contemp Clin Trials* 2006; 27:227-237.
50. Brenes, GA, Williamson, JD, **Messier**, SP, Rejeski, WJ, Pahor, M, Ip,E, Penninx, BWJH. Treatment of minor depression in older adults: a pilot study comparing sertraline and exercise. *Aging and Mental Health.* 2007;11:61-69.
51. Miller, GD, Nicklas, BJ, Davis, C, Loeser, RF, Lenchik, L, **Messier**, SP. Intensive weight loss program improves physical function in older obese adults with knee osteoarthritis. *Obesity.* 2006; 14:1219-1230.
52. Wang, X, Miller, G.D., **Messier**, S.P., Nicklas, B.J. Knee strength maintained despite loss of muscle mass during intensive weight loss in older obese adults with knee osteoarthritis. *J Gerontol: Med Sci.* 2007 62: 866-871.
53. **Messier**, S.P., Mihalko, S., Loeser, R.F., Legault, C., Jolla, J., Pfruender, J. Prosser, B., Andrian, A., Williamson, J.D. Glucosamine/Chondroitin combined with exercise for the treatment of knee osteoarthritis: a preliminary study. *Osteoarthritis Cartilage.* 2007; 15, 1256-1266.
54. **Messier**, S.P. Physical activity and weight loss interventions in older adults with knee osteoarthritis. *N C Med J.* 2007 Nov-Dec;68(6):436-8.
55. Chua, S.D., **Messier**, S.P., Legault, C., Hu, N., Lenz, M.E., Thonar, E.J-M.A., Loeser, R.F. Effect of an exercise and dietary intervention on serum biomarkers in overweight and obese adults with osteoarthritis of the knee. *Osteoarthritis Cartilage.*2008 16:1047-1053.
56. **Messier**, S.P. Obesity and osteoarthritis: disease genesis and nonpharmacologic weight management. *Rheum Dis Clin N Am.* 2008 34:713-729.
57. **Messier**, S.P., Legault, C. Schoenlank, C., Newman, J.J., Martin, D.F., DeVita, P. Risk factors and mechanisms of knee injury in runners. *Med Sci Sports Exer.* 2008. 40:1873-1879.
58. **Messier**, S.P. Obesity and osteoarthritis: disease genesis and nonpharmacologic weight management. *Med Clin N Am.* 2009 93:145-149.
59. Sevick, M.A., Miller, G.D., Loeser, R.F., Williamson, J.D., **Messier**, S.P. Cost effectiveness of exercise and diet in overweight and obese adults with knee OA. *Med Sci Sports Exer.* 2009. 41:1167-1174.
60. **Messier**, S.P., Legault, C., Mihalko, S., Miller, G.D., Loeser, R.F., DeVita, P., Lyles, M., Eckstein, F., Hunter, D.J., Williamson, J.D., Nicklas, B.J. The intensive diet and exercise for arthritis (IDEA) trial: design and rationale. *BMC Musculoskeletal Disorders*, 2009, 10:93.
61. Shea, MK, Houston, DK, Nicklas, BJ, **Messier**, SP, Davis, CC, Miller, ME, Harris, TB, Kitzman, DW, Kennedy, K. Kritchevsky, SB. The effect of randomization to weight-loss on total mortality in older overweight and obese adults: The ADAPT study. *J Gerontol: Med Sci.* 2010;65A:519-525. PMID: 20080875
62. **Messier**, S.P. Invited commentary on "Effects of dietary intervention and quadriceps strengthening exercises on pain and function in overweight people with knee pain: randomized controlled trial." by Jenkinson et al. *BMJ* 2009. Evidence-Based Medicine. 2010 Feb;15(1):21-2.

63. **Messier, S.P.** Diet and Exercise for Obese Adults with Knee Osteoarthritis. *Clin Geriatric Medicine*. 2010;26, 461-477.
64. Jordan, J.M., Sowers, M.F., **Messier, S.P.**, Bradley, J., Arangio, G., Katz, J.N., Losina, E., Rovati, L., Bachtell, N., Cooper, C., Spector, T., Zhang, W., Gardiner, J., Wahba, M. Methodologic issues in clinical trials for prevention or risk reduction in osteoarthritis. *Osteoarthritis Cartilage*.2011;19,500-508.
65. **Messier, S.P.**, Legault, C., Loeser, R.F., VanArsdale, S.J., Davis, C., Ettinger, W.H., DeVita, P. Does high weight loss in older adults with knee osteoarthritis affect bone-on-bone joint loads and muscle forces during walking?. *Osteoarthritis Cartilage*. 2011;19, 272-280.
66. Brosseau, L., Wells, G.A., Tugwell, P., Egan, M., Dubouloz, C-J., Casimiro, L., Bugnariu, N., Vivian A, Welch, Gino De Angelis, Francoeur, L., Milne, S., Loew, L., Jessica McEwan, **Messier, S.P.**, Doucet, E., Kenny, G.P., Prud'homme, D., Lineker, S., Bell, M., Poitras, S., Finestone, H.M., Laferrière, L., Haines-Wangda, A., Russell-Doreleyers, M., Lambert, K. Ottawa panel evidence based clinical practice guidelines in the management of osteoarthritis in obese and overweight adults. *Physical Therapy Journal*.2011;91, 843-861.
67. Aaboe, J., Bliddal, H., **Messier, S.P.**, Alkjaer, T., Henriksen, M. Effects of an intensive weight loss program on knee joint loading in obese osteoarthritis patients. *Osteoarthritis Cartilage*.2011;19, 822-828.
68. **Messier, S.P.** Effects of exercise interventions in older adults with knee osteoarthritis. *HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery*. 2012;8,49-50.
69. Miller, G.D., Nicklas, B.J., Davis, C., Legault, C., **Messier, S.P.** Basal growth hormone concentration increased following a weight loss focused dietary intervention in older overweight and obese women. *J Nutr Health Aging*. 2012;16,169-174
70. Chmelo, E., Nicklas, B.J., Legault, C. Miller, G.D., **Messier, S.P.** Physical activity and physical function in older adults with knee osteoarthritis, *J Physical Activity and Health*. 2013: 10, 777-783.
71. **Messier, S.P.**, Mihalko, S.L., Beavers, D.P. Nicklas, B.J., DeVita, P., Carr, J.J., Hunter, D.J., Williamson, J.D., Bennell, K.L., Guermazi, A., Lyles, M., Loeser, R.F. Strength training for arthritis trial (START): design and rationale. *BMC Musculoskeletal Disorders*. 2013: 14, 208.
72. **Messier, S.P.**, Mihalko, S.L., Legault, C., Miller, G.D., Nicklas, B.J., DeVita, P., Beavers, D.P., Hunter, D.J., Lyles, M.F., Eckstein, F., Williamson, J.D., Carr, J.J., Guermazi, A., Loeser, R.F. Effects of intensive diet and exercise on knee joint loads, inflammation, and clinical outcomes among overweight and obese adults with knee osteoarthritis: The IDEA randomized clinical trial. *JAMA*, 2013; 310(12):1263-1273.
73. Henriksen, M., Hunter, D.J., Dam, E.B., **Messier, S.P.**, Andriachi, T.P., Lohmander, L.S., Aaboe, J., Boesen, M., Gudbergesen, H., Bliddal, H., Christensen, R. Is increased joint loading detrimental to obese patients with knee osteoarthritis? A secondary data analysis from a randomized trial. *Osteoarthritis Cartilage*. *Osteoarthritis Cartilage*, 2013;21: 1865-1875.
74. Yázigí, F., Espanha, M., Vieira, F., **Messier, S.P.**, Monteiro, C., Veloso, A.P. The PICO project: aquatic exercise for knee osteoarthritis in overweight and obese individuals. *BMC Musculoskeletal Disorders*. 2013;14, 320.
75. **Messier, S.P.**, Beavers, D.P., Loeser, R.F., Carr, J.J., Khanjanchi, S., Legault, C., Nicklas, B.J., Hunter, D.J., DeVita, P. Knee-joint loading in knee osteoarthritis: influence of abdominal and thigh fat. *Med Sci Sports Exer*. 2014;46, 1677-1683.
76. **Messier, S.P.**, Pater, M., Beavers, D.P., Legault, C., Loeser, R.F., Hunter, D.J., DeVita, P. Influences of alignment and obesity on knee joint loading in osteoarthritic gait. *Osteoarthritis Cartilage*. 2014;22, 912-917.
77. Beavers, K.M., Beavers, D.P., Newman, J.J., Anderson, A.M., Loeser, R.F., Nicklas, B.J., Lyles, M.F., Miller, G.D., Mihalko, S.L., **Messier, S.P.** Effects of total and regional fat loss on plasma CRP and IL-6 in overweight and obese, older adults with knee osteoarthritis. *Osteoarthritis Cartilage*. 2015;23,249-56.
78. **Messier, S.P.** Weight gain and incident knee osteoarthritis in asymptomatic at risk patients: a step closer to primary prevention trials. *Osteoarthritis Cartilage*. 2015 Apr;23(4):501-2.

79. Beavers DP, Beavers KM, Loeser RF, Walton NR, Lyles MF, Nicklas BJ, Shapses SA, Newman JJ, **Messier SP**. The independent and combined effects of intensive weight loss and exercise training on bone mineral density in overweight and obese older adults with osteoarthritis. *Osteoarthritis Cartilage*; 2014;22,726-33. PMID: 24742955
80. Hunter, D.J., Beavers, D.P., Eckstein, F., Guermazi, A. Loeser, R.F., Nicklas, B.J., Mihalko, S.L., Miller, G.D., Lyles, M.F., DeVita, P., Legault, C., Carr, J.J., Williamson, J.D., **Messier, S.P.** The intensive diet and exercise for arthritis trial (IDEA): 18-month radiographic and MRI outcomes. *Osteoarthritis Cartilage*. 2015 Jul;23(7):1090-8.
81. **Messier, S.P.**, Callahan, L.F., Golightly, Y.M., Keefe, F.J. OARSI clinical trials recommendations: Design and conduct of clinical trials using lifestyle diet and exercise interventions in patients with osteoarthritis. *Osteoarthritis Cartilage*. 2015;23,787-797.
82. Atukorala, I., Makovey, J., Lawler, L., **Messier, S.P.**, Bennell, K., Hunter, D.J. Is there a dose response relationship between weight loss and symptom improvement in persons with knee osteoarthritis? *Arthritis Care Research*. 2016;68,1106-1114.
83. **Messier, S.P.**, Beavers, D.P., Herman, C., Hunter, D.J., DeVita, P. Are unilateral and bilateral knee osteoarthritis patients unique subsets of knee osteoarthritis? A biomechanical perspective. *Osteoarthritis Cartilage*. 2016;24,807-813.
84. **Messier, S.P.** Weight gain and incident knee osteoarthritis in asymptomatic at risk patients: a step closer to primary prevention trials. *Osteoarthritis Cartilage*. 2015;23, 501-502.
85. Devita P., Fellin R.E., Seay J.F., Ip E., Stavro N., **Messier S.P.** The relationships between age and running biomechanics. *Med Sci Sports Exerc*. 2016 Jan;48(1):98-106.
86. Nicklas B.J., Beavers, D.P., Mihalko, S.L., Miller, G.D., Loeser, R.F., **Messier, S.P.** Relationship of objectively-measured habitual physical activity to chronic inflammation and self-reported fatigue in middle-aged and older adults with knee osteoarthritis. *J. Gerontol. Med. Sci*. 2016.11, 1437-1443.
87. Deshpande, B.R., Katz, J.N., Solomon, D.H., Yelin, E.H., Hunter, D.J., **Messier, S.P.**, Suter, L.G., Losina, E. Number of persons with symptomatic knee osteoarthritis in the US: impact of race and ethnicity, age, sex, and obesity. *Arthritis Care Research*. 2016;68, 1743-1750.
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89. Miller, G.D., Beavers, D.P., Hamm, D., Mihalko, S.L., **Messier, S.P.** Nutrient Intake During Diet-Induced Weight Loss and Exercise Interventions in a Randomized Trial in Older Overweight and Obese Adults. *J. Nutr Health Aging*. In press.
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91. **Messier, S.P.**, Callahan, L.F., Beavers, D.P., Queen, K., Mihalko, S.L., Miller, G.D., Losina, E., Katz, J.N., Loeser, R.F., Quandt, S.A., DeVita, P., Hunter, D.J., Lyles, M.F., Newman, J., Hackney, B., Jordan, J.M. Weight-loss and exercise for communities with arthritis in North Carolina (we-can): design and rationale of a pragmatic, assessor-blinded, randomized controlled trial. *BMC Musculoskeletal Disorders*. 2017. DOI 10.1186/s12891-017-1441-4.

D. Research Support

ACTIVE

1 U01 AR068658 (Messier, PI)

NIH/NIAMS

Weight loss and exercise for communities with arthritis in North Carolina (WE-CAN)

9/1/2015 – 8/31/2020

This study is a pragmatic community based trial designed to determine whether an 18-month diet-induced weight loss with exercise intervention significantly decreases pain in overweight and obese adults with knee OA relative to an attention control group.

W81XWH-16-1-0001 (Messier, PI)

12/15/2015 – 12/14/2018

USAMRAA (U.S. Army Medical Research Acquisition Activity)

The strength training and runners study (STARS)

This phase II randomized clinical trial will determine the effect of a 9-month strength training program on the incidence of overuse running related injuries in 150 adult female recreational and competitive runners.

1 R01 AR059105 (Messier, PI)

9/1/2011 – 8/31/2016

NIH/NIAMS

Strength training and arthritis trial (START)

This study will examine the effect of long term intensive resistance training on function, knee joint loads, inflammation, and disease progression in 372 older adults with knee osteoarthritis.

1 R01 AR064320 (Losina, PI)

5/01/2013 – 4/30/2018

NIH/NIAMS

Clinical impact and cost-effectiveness of pain management in knee OA

The aims of this study are to examine the long-term clinical impact and cost-effectiveness of pharmacologic analgesic strategies for knee OA that employ approved and investigational agents.

Role: Co-Investigator

COMPLETED LAST 3 YEARS

3R01AR059105-03S1 (Messier, PI)

9/01/2013-8/31/2015

NIH/NIAMS

Strength training and arthritis trial (START): BIRT supplement

This supplement to the START trial adds muscle biopsy testing on a subset of the population. START will define the change in knee-joint loading and pain consequent to change in muscle strength due to long-term intensive strength training in older adults with knee OA. This supplement will define the adaptations at the cellular level in skeletal muscle associated with OA that may contribute to impaired function

W81XWH-12-1-0360 (Messier, PI)

8/15/2012 – 8/14/2015

U.S. Army Medical Research Acquisition Activity USAMRAA (U.S. Army)

The runners and injury longitudinal study: Injury recovery supplement

This study will identify the mechanistic underpinnings of recovery from overuse soft tissue running injuries. It will inform whether a return to pre-injury activity is appropriate, if further treatment is required, and whether the injured runner exhibits chronic biomechanical and strength deficits that increase the risk of lower extremity OA, and disability later in life.

R01 AR052528 (Messier, PI)

09/01/06-08/31/11

NIH/NIAMS

“Intensive Dietary Restriction with Exercise in Arthritis”

The major goal is determine if an intensive weight loss intervention combined with exercise will reduce inflammation and joint loads and alter disease progression in older obese adults with knee OA.

W81XWH-10-1-0455 (Messier, PI)

6/1/2010 – 3/31/2013

U.S. Army Medical Research Acquisition Activity USAMRAA (U.S. Army)
The runners and injury longitudinal study (TRAILS)

This study will identify factors that lead to overuse injuries as a generalized phenomenon and those factors that lead to the specific injury of anterior knee pain.