

MILAP SANDHU, PT, PhD

Curriculum Vitae

Post-doctoral Associate
University of Florida
Department of Physical Therapy
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EDUCATION

2004 - 2010	Ph.D.	Rehabilitation Science	University of Florida, Gainesville, FL
		Dissertation title: Neural Plasticity and Control of Breathing	
		Advisor: David D. Fuller	
1998 - 2003	B.P.T.	Physical Therapy	Guru Nanak Dev University (India)

PROFESSIONAL EXPERIENCE

2011 - present	Post-doctoral Associate Department of Physical Therapy, UF Supervisors: Paul J. Reier and David D. Fuller
2005 - 2010	Graduate Research Assistant Respiratory Neurobiology and Neuroplasticity Laboratory Department of Physical Therapy, UF
2004 - 2005	Graduate Research Assistant National Older Driver Research and Training Center Department of Occupational Therapy, UF
2003 - 2004	Physical Therapist Apollo Physiotherapy & Rehabilitation Center, Amritsar (India)
2002 - 2003	Physical Therapy Intern Dayanand Medical College & Hospital, Ludhiana (India)

PHYSICAL THERAPY CERTIFICATION

2005 - present	Michigan# 5501012290
2003 - present	India# IAP10387

HONORS AND AWARDS

2004 - 2008	Alumni Fellowship, UF
Jul 2006	Student Travel Grant Award Graduate Student Council, UF

Nov 2006	Rehabilitation Science Doctoral Program Travel Award College of Public Health and Health Professions, UF
Apr 2007	Brooks Rehabilitation Research Grant Award Department of Health Professions, UF
Jun 2007	B.W. Robinson Memorial Endowment for the Neurosciences Honorable Mention, Tallahassee Memorial Hospital, FL
Jan 2008	Poster Award 3rd Neuromuscular Plasticity Symposium, UF
Nov 2008	Outstanding Achievement Award 14 th International Student Academic Awards, Gainesville, FL
Dec 2008	Best Poster Award 4th Neuromuscular Plasticity Symposium, UF
Mar 2009	UF Division of Sponsored Research Travel Grant Research and Graduate Programs, UF
2009, 2010	Outstanding Research Award 22 nd and 23 rd College of Health Profession Research Day, UF

RESEARCH GRANTS

Title	Combining pharmacological therapy with cell transplantation to improve respiratory function after spinal cord injury
Participation	Principal Investigator
Type	Bryan W. Robinson Endowment, Tallahassee Memorial Neuroscience Center
Direct Costs	\$2,500
Funding Period	2008 - 2009
Title	Neural repair and functional respiratory recovery after cervical spinal cord injury
Participation	Principal Investigator
Type	McKnight Brain Institute Graduate Investigators Research Grant
Direct Costs	\$5,000
Funding Period	2008 – 2009

TEACHING EXPERIENCE

Spring 2009	Supervised Teaching Neuroscience in Physical Therapy UF Doctoral Program in Physical Therapy
Feb 2010	Invited guest lecture Motor Systems – Clinical aspects Neuroscience in Physical Therapy UF Doctoral Program in Physical Therapy

INVITED PRESENTATIONS

6. Neural Precursor Cell Transplantation after Cervical Spinal Cord Injury. Symposia on Neurorehabilitation and Plasticity, Brain Rehabilitation and Research Center, McKnight Brain Institute, Gainesville, FL. Jan 25, 2011.
5. Respiratory Neuroplasticity and Cell Transplantation following Cervical Spinal Cord Injury. Neuro Noons Presentation, Dept. of Physical Therapy, UF. June 3, 2010

4. Phrenicotomy alters Expression of Long Term Facilitation in Anesthetized Rats. Trainee Highlights in respiration physiology. Experimental Biology (EB) Conference. New Orleans, LA. April 20, 2009.
3. Phrenicotomy alters Expression of Long Term Facilitation in Anesthetized Rats. Respiration Physiology Hot Topics. Experimental Biology (EB) Conference. New Orleans, LA. April 18, 2009.
2. Enhancing Respiratory Recovery after Spinal Cord Injury using Cell Transplantation and Pharmacological Methods. 10th Annual Bryan Robinson Foundation Endowment, Tallahassee Memorial Hospital, FL. June 5, 2008
1. Role of Phrenic Afferents in Respiratory Neuroplasticity after Cervical Spinal Cord Injury. Neuro Noons Presentation, Dept. of Physical Therapy, UF. Aug 7, 2008

PROFESSIONAL MEMBERSHIPS

- 2009 - American Physiological Society
- 2006 - Society for Neuroscience
- 2004 - Indian Association of Physiotherapists.

PROFESSIONAL SERVICE

- 2009-10 Grass Traveling Scientist Program Committee
Society for Neuroscience North Central Florida Chapter
- 2009-10 Neuroscience-Teacher Partner Program Committee
Society for Neuroscience North Central Florida Chapter

PROFESSIONAL TRAINING

- 2006 Spinal Cord Injury Research Training Program
(NIH sponsored 3 week program offered at the Ohio State University)
- 2004 McKenzie method of Spinal Pain Management and Neural Tissue Mobilization

PROFESSIONAL PEER-REVIEWED PUBLICATIONS

IN PREPARATION FOR SUBMISSION

SANDHU MS, ROSS HH, LEE KZ, DOUGHERTY BJ, LAYWELL ED, ORMEROD BK, REIER PJ, FULLER DD. (2011) Transplantation of post-natal derived neural precursor cells after high cervical hemisection.

LEE KZ, DOUGHERTY BJ, **SANDHU MS**, REIER PJ, FULLER DD. (2011) Firing behaviors of phrenic motoneurons following chronic high cervical spinal cord injury in rats

SUBMITTED / IN REVIEW

ROSS HH, **SANDHU MS**, CHEUNG TF, SHER WJ, TIEMEIER AJ, LAYWELL ED, FULLER DD. (2011) In vivo intermittent hypoxia elicits enhanced proliferation and neuronal differentiation in cultured neural progenitors. Submitted to Stem Cell Research.

PUBLISHED

12. LEE KZ, QIU K, SANDHU MS, ELMALLAH MK, FALK DJ, LANE MA, REIER PJ, BYRNE BJ, FULLER DD. Hypoglossal neuropathology and respiratory activity in Pompe mice. *Frontiers in Respiratory Physiology* (in press; accepted June 2011)
11. WHITE TE, LANE MA, **SANDHU MS**, O'STEEN BE, FULLER DD, REIER PJ. (2010) Neuronal progenitor cell transplantation and respiratory outcomes following upper cervical spinal cord injury in adult rats. *Exp Neurol*. 2010 Sep;225(1):231-6. Epub 2010 Jun 18.
10. LEE KZ, **SANDHU MS**, DOUGHERTY BJ, REIER PJ, FULLER DD. (2010) Influence of vagal afferents on supraspinal and spinal respiratory activity following cervical spinal cord injury in rats. *J Appl Physiol*. Aug;109(2):377-87. Epub 2010 May 27.
9. **SANDHU MS**, LEE KZ, FREGOSI RF, FULLER DD. (2010) Phrenicotomy alters phrenic long term facilitation (LTF) following intermittent hypoxia in anesthetized rats. *J Appl Physiol*. 2010 Aug;109(2):279-87. Epub 2010 Apr 15.
8. FULLER DD, DOUGHERTY BJ, DOPERALSKI NJ, **SANDHU MS**, HAYWARD LF. (2009) Prenatal nicotine exposure alters respiratory long term facilitation in neonatal rats. *Respir Physiol Neurobiol*. 169(3):333-7.
7. **SANDHU MS**, DOUGHERTY BJ, LANE MA, BOLSER DC, KIRKWOOD PA, REIER PJ, FULLER DD. (2009) Respiratory recovery following high cervical hemisection. *Respir Physiol Neurobiol*. 169(2):94-101.
6. FULLER DD, **SANDHU MS**, DOPERALSKI NJ, LANE MA, WHITE TE, BISHOP MD, REIER PJ. (2009) Graded unilateral cervical spinal cord injury and respiratory motor recovery. *Respir Physiol Neurobiol*. 165(2-3):245-53
5. LANE MA, WHITE TE, COUTTS MA, JONES AL, **SANDHU MS**, BLOOM DC, BOLSER DC, YATES BJ, FULLER DD, REIER PJ. (2008) Cervical prephrenic interneurons in the normal and lesioned spinal cord of the adult rat. *J Comp Neurol*. 511(5):692-709.
4. DOPERALSKI NJ, **SANDHU MS**, REIER PJ, FULLER DD. Ventilation and Phrenic Output following high cervical spinal hemisection in male vs. female rats. (2008) *Respir Physiol Neurobiol*. 162(2):160-7
3. FULLER DD, DOPERALSKI NJ, DOUGHERTY BJ, **SANDHU MS**, BOLSER DC, REIER PJ. Modest Spontaneous Recovery of Ventilation Following Chronic High Cervical Hemisection in Rats. (2008) *Exp Neurol*. May;211(1):97-106
2. CLASSEN S., SHECHTMAN O., STEPHENS B., DAVIS E., BENDIXEN R., BELCHIOR P., **SANDHU M.**, JUSTISS M., POSSE C., MCCARTHY D., & MANN W. (2005). The impact of roadway intersection design on driving performance of young and senior adults. *Topics in Geriatric Rehabilitation*, 22(1), 18- 26
1. SHECHTMAN O., CLASSEN S., STEPHENS B. DAVIS E., BENDIXEN R., BELCHIOR, P., **SANDHU M.**, MCCARTHY D., & MANN W. (2005). The impact of intersection design on simulated driving performance of young and senior adults. *Topics in Geriatric Rehabilitation*, 22(1), 27- 35

PROFESSIONAL ABSTRACTS/POSTERS

NATIONAL

17. LEE KZ, MATTIO RY, LANE MA, DOUGHERTY, BJ, **SANDHU MS**, SANCHEZ JC, REIER PJ, FULLER DD. (2011) Bursting patterns of embryonic spinal cord grafts following repetitive acute intermittent hypoxia training in cervical spinal cord injured rats. Program No. 255.03. Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011.
16. **SANDHU MS**, LEE KZ, ELMALLAH MK, FALK DJ, MATTIO RY, GONZALEZ-ROTHI E, REIER PJ, BYRNE BJ, FULLER DD. (2011) Hypoglossal motoneuron pathology in a mouse model of Pompe disease. FASEB J March 17, 2011 25:lb635
15. LEE KZ, DOUGHERTY BJ, **SANDHU MS**, REIER PJ, FULLER DD. (2011) Modulation of phrenic motoneuron plasticity following chronic high cervical spinal cord injury in the rat. FASEB J March 17, 2011 25:1111.7
14. ROSS HH, **SANDHU MS**, SHER WJ, CHEUNG TF, TIEMEIER AJ, REYNOLDS BA, FULLER DD. (2011) Acute intermittent hypoxia alters cell fate choice in postnatal neural precursors. FASEB J March 17, 2011 25:861.2
13. **SANDHU MS**, ROSS HH, DOUGHERTY BJ, LAYWELL ED, ORMEROD BK, REIER PJ, FULLER DD. (2010) Respiratory changes following transplantation of post-natal neural precursors into high cervical hemilesions of the adult rat. Society for Neuroscience Conference 2010.
12. LEE KZ, **SANDHU MS**, DOUGHERTY BJ, REIER PJ, FULLER DD. (2010) Influence of the vagal afferent on supraspinal and spinal respiratory activity following cervical spinal cord injury in rats. FASEB J April 6, 2010 24:799.19
11. **SANDHU MS**, FREGOSI RF, LANE MA, REIER PJ, FULLER DD. (2009) Phrenicotomy alters expression of long term facilitation in anesthetized rats. FASEB J April 22, 2009 23:1010.15
10. FULLER D.D., LANE M.A., WHITE T.E., **SANDHU M.S.**, REIER P.J. (2008) Cervical Spinal Cord Injury and Respiratory Neuroplasticity. Acta Physiologica Sinica. 60(1):51, 2008.
9. FULLER D.D., DOPERALSKI N.J., DOUGHERTY B.J., **SANDHU M.S.**, REYNOLDS C., HAYWARD L.F. (2008) Prenatal nicotine and respiratory long-term facilitation in neonatal rats. FASEB J. April 5, 2008 22:955.12.
8. LANE M.A., WHITE T.E., COUTTS M.A., JONES A.L., **SANDHU M.S.**, SIEGEL K.A., O'STEEN B.E., FULLER D.D., REIER P.J. (2007) Neuroplasticity in the respiratory circuit following lateral hemisection in the adult rat cervical spinal cord. 13th International Symposium on Neural Regeneration, Pacific Grove, CA. Dec. 2007
7. LANE M.A., WHITE T.E., COUTTS M.A., **SANDHU M.S.**, SIEGEL K.A., O'STEEN B.E., FULLER D.D., REIER P.J. (2007) Plasticity in respiratory circuitry following partial spinal cord injury (SCI) in the adult rat. Society for Neuroscience Annual Meeting 2007.
6. **SANDHU M.S.**, DOPERALSKI N.J., BOLSER D.C., REIER P.J., FULLER D.D. (2007) The phrenic motor circuitry after cervical spinal cord injury: insights from neurophysiological methods. 14th Annual Conference of the American Society for Neural Therapy and Repair, Clearwater Beach, FL. May 3 -7, 2007.
5. LANE M.A., **SANDHU M.S.**, FULLER D.D., REIER P.J. Transneuronal tracing reveals interneurons premotor to the phrenic motor nucleus in the adult rat spinal cord. (2007) American Society of Neural Therapy and Repair National Conference 2007.

4. **SANDHU M.S.**, DOPERALSKI N.J., BOLSER D.C., REIER P.J., FULLER D.D. (2006) Waveform correlation of ipsilateral vs. contralateral phrenic motor output following chronic C2 cervical hemisection in rats. Program No. 447.3. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006.
3. CLASSEN, S., SHECHTMAN, O; STEPHENS, B., DAVIS, E., BENDIXEN, R., BELCHIOR, P., **SANDHU, M.**, JUSTISS, M., POSSE, C., MCCARTHY, D., MANN, W. (2006) The Impact of Roadway Intersection Design on Driving Performance of Young and Senior Adults. Gerontological Society of America's 59th Annual Scientific Meeting Dallas, TX, November 16-23, 2006.
2. SHECHTMAN O., CLASSEN S., STEPHENS B., DAVIS E., BENDIXEN R., BELCHIOR P., **SANDHU M.**, MCCARTHY D., AND MANN W. (2006) The impact of intersection design on simulated driving performance of young and senior adults. 4th Annual STISIM Drive User Group Meeting: New Approaches to Simulation and the Older Operator, Boston, MA, October 27, 2006.
1. **SANDHU M.S.**, SINHA A.G., SANDHU J.S. (2003). A Survey of the Hamstring Length among adolescent Rural Population of Punjab. Silver Jubilee Congress of Indian Association of Sports Medicine, Amritsar, Punjab, India.

LOCAL

6. **SANDHU MS**, ROSS HH, DOUGHERTY BJ, LAYWELL ED, ORMEROD BK, REIER PJ, FULLER DD. (2011) Respiratory changes following transplantation of post-natal neural precursor cells after cervical spinal cord injury in adult rats. 6th Annual Neuromuscular Plasticity Symposium, Gainesville, FL. March 2011
5. **SANDHU MS**, ROSS HH, DOUGHERTY BJ, LAYWELL ED, ORMEROD BK, REIER PJ, FULLER DD. (2010) Transplantation of Post-Natal Stem Cells after Cervical Spinal Cord Injury (SCI) 5th Annual Neuromuscular Plasticity Symposium, Gainesville, FL. March 2010.
4. **SANDHU MS**, REIER PJ, FREGOSI RF, FULLER DD. (2009) Phrenic afferents influence respiratory plasticity. (2009) PHHP Research Day, Gainesville, FL. April 2009.
3. **SANDHU M.S.**, WHITE T.E., LANE M.A., DOUGHERTY, B.J., REIER P.J., FULLER D.D. (2008) Phrenic motor output after spinal cord injury and cellular replacement therapy. 4th Annual Neuromuscular Plasticity Symposium, Gainesville, FL. Jan 31, 2008.
2. DOUGHERTY B.J., DOPERALSKI N.J., **SANDHU M.S.**, Carr H.M., REYNOLDS C.R., HAYWARD L.F., FULLER D.D. (2008) Phrenic motor output after spinal cord injury and cellular replacement therapy. 3rd Annual Neuromuscular Plasticity Symposium, Gainesville, FL. Jan 31, 2008.
1. **SANDHU M.S.**, DOPERALSKI N.J., BOLSER D.C., REIER P.J., FULLER D.D. (2006) Correlation of ipsilateral (IL) versus contralateral (CL) phrenic inspiratory waveforms after chronic C2 cervical hemisection (C2HS) in rats. 2nd Annual Neuromuscular Plasticity Symposium, MBI DeWeese Auditorium and President's House, University of Florida, Gainesville, FL, Dec. 1, 2006.

NON-PROFESSIONAL MEMBERSHIPS

2006 - Sigma Xi Society

Last Updated: May 2011

