

Xiangrong Shi, PhD
Graduate School of Biomedical Sciences
Institute for Healthy Aging
Pharmacology & Neuroscience
Email: Xiangrong.Shi@unthsc.edu



Area of Expertise

The focus of my research lab is to apply and assess a safe intermittent-hypoxia (IH) procedure as a physical-conditioning regimen to preserve and improve the heart and brain functions in humans. Repeated intermittent-hypoxia induces cyclic, brief, and moderate decreases in blood oxygen concentration, and increases heart rate and breathing rate. We have found that IH conditioning is a safe, novel, and effective way to improve heart function and to optimize oxygen delivery to the brain. We believe this IH intervention is beneficial for older adults, especially those who cannot participate in regular physical activities because of the limitations associated with age-related declining physical or mental functions. Moreover, repeated low-dose intermittent-hypoxia can promote and mobilize the growth factors for healthy nerve system and blood vessel. These physiological and neurobiological reactions and adaptations to IH conditioning may have multi-faceted influences on prevention and treatment for mild Alzheimer's disease and cognitive impairment associated with aging.

Qualifications

MA in Exercise Science, Shanghai Institute of Physical Education
BA in Physical Education, Shanghai Teachers University
PhD in Physiology, Yale University

Recent Publications

Determinants of student's physical activity: a 12-month follow-up study in Ningxia province

Huang, W., Shi, X., Wang, Y., Li, X., Gao, P., Lu, J. & Zhuang, J., Dec 2021, In: BMC Public Health. 21, 1, 512.

Intermittent Hypoxic Preconditioning: A Potential New Powerful Strategy for COVID-19 Rehabilitation

Cai, M., Chen, X., Shan, J., Yang, R., Guo, Q., Bi, X., Xu, P., Shi, X., Chu, L. & Wang, L., 30 Apr 2021, In: Frontiers in Pharmacology. 12, 643619.

Reduced cerebrovascular and cardioventilatory responses to intermittent hypoxia in elderly

Liu, X., Chen, X., Kline, G., Ross, S. E., Hall, J. R., Ding, Y., Mallet, R. T. & Shi, X., Jan 2020, In: Respiratory Physiology and Neurobiology. 271, 103306.

Intermittent Hypoxia Training for Treating Mild Cognitive Impairment: A Pilot Study

Wang, H., Shi, X., Schenck, H., Hall, J. R., Ross, S. E., Kline, G. P., Chen, S., Mallet, R. T. & Chen, P., 2020, In: American journal of Alzheimer's disease and other dementias. 35

Wuqinxi exercise improves hand dexterity in patients with Parkinson's disease

Wang, T., Xiao, G., Li, Z., Jie, K., Shen, M., Jiang, Y., Wang, Z., Shi, X. & Zhuang, J., 2020, In: Evidence-based Complementary and Alternative Medicine. 2020, 8352176.

Effects of exercise training on the autophagy-related muscular proteins expression in ovariectomized rats

Zhong, W., Shi, X., Yuan, H., Bu, H., Wu, L. & Wang, R., 2019, In: Frontiers in Physiology. 10, JUN, 735.

Risk factors associated with poor physical fitness in three- to six-year-old children in tujaia-nationality settlement of China

Liu, X., Xiang, Z., Liu, C., Shi, X., Yi, X., Cheng, M., Schenck, H. & Bates, J., 2018, In: Evidence-based Complementary and Alternative Medicine. 2018, 5702190.

The risk factors of 9-year follow-up on hypertension in middle-aged people in Tujia-Nationality settlement of China

Liu, X., Liu, C., Schenck, H., Yi, X., Wang, H. & Shi, X., 1 Dec 2017, In: Journal of Human Hypertension. 31, 12, p. 838-842 5 p.

Aerobic exercise training improves orthostatic tolerance in aging humans

Xu, D., Wang, H., Chen, S., Ross, S., Liu, H., Olivencia-Yurvati, A., Raven, P. B. & Shi, X., 2017, In: Medicine and Science in Sports and Exercise. 49, 4, p. 728-735 8 p.

Enhanced cerebral perfusion during brief exposures to cyclic intermittent hypoxemia

Liu, X., Xu, D., Hall, J. R., Ross, S., Chen, S., Liu, H., Mallet, R. T. & Shi, X., 2017, In: Journal of Applied Physiology. 123, 6, p. 1689-1697 9 p.

Sponsored Projects

Cranial Osteopathy and Cerebral Tissue Oxygenation

Shi, X.

American Osteopathic Association

1/09/09 → 30/08/10

Intermittent Hypoxia and Cardiovascular Function - The Effect of Age: Acute Cardiovascular response to Simulated OSA

Shi, X.

Intramural Research(UNTHSC)

1/06/16 → 31/05/18

Intermittent Hypoxia as a Therapy for Cognitive Loss in Aging: A Proof-of-Concept Pilot Study

Shi, X.

Intramural Research(UNTHSC)

1/09/15 → 31/08/16

Intermittent Hypoxia - Novel Intervention for Treatment of Mild Cognitive Impairment

Shi, X.

Texas A&M Health Science Center

1/10/15 → 30/07/18

Wrist-Based Non-Invasive Wearable Sensors for Continuous Blood Pressure Monitoring using Pulse Transit Time

Shi, X. & Hensel, K.

Intramural Research(TxMRC)

1/05/13 → 30/04/14