Title: Effects & Mechanisms of Exercise on Cancer Prevention

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Brief Biodata

Associate Professor Hanson Huang Sen-Fang graduated from Institute of Health and Kinesiology, University of Texas at Tyler, USA. Currently, he works as Faculty member & director of Center for Physical Education Teaching, College of Education & Communication, Tzu Chi University, Hualien Taiwan, where he is teaching several courses (Physical Activity and Health, Lab & Practice for Health Physical Fitness, Clinical Exercise Prescription etc.) at all levels, from undergraduate to graduate studies. Associate Professor Hanson Huang has been publishing the results of his researches in a number of local and international scientific journals in the areas of Health, Exercise, Sport Sciences and others. Associate professor Hanson Huang also has frequently been invited as keynote/invited speakers at domestic and international scientific conferences in exercise/physical activity, nutrition, health promotion, physical therapy and education. His current research interest is physical activity and exercise on diseases prevention and treatment, with special focus in clinical exercise on cardiovascular, metabolic, neurological, inflammatory disorders and cancers therapy. Associate Professor Hanson Huang also works as the secretary general of the academic society of clinical exercise physiology in Taiwan.

Abstract.

Cancer is the second leading cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. Globally, about 1 in 6 deaths is due to cancer. Physical inactivity is one of main risk factors of cancer. One third of deaths from cancer are due to the 5 leading behavioral and dietary risks such as high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use. Epidemiological researches confirmed that increased physical activity or regular exercise and improved cardiorespiratory fitness lowered risks of breast, colon, lung, prostate, esophageal, liver, kidney, stomach cancer of the cardia,

endometrial, myeloid leukemia, myeloma, head and neck, rectal, bladder, at least total 13 cancers. The post-exercise serum may be the potentially preventive antidote mediated physical activity on cancer prevention. Animal and human experiments showed that post-exercise serum inhibited prostate, breast and lung cancer cell proliferation and induced apoptosis of these cells, compared with pre-exercise serum. In line with the results emerged from the effects of post-exercise serum, a review paper reported that certain myokines released from skeletal muscle such as calprotectin, osteonectin or secreted protein acidic and rich in cysteine, oncostatin and irisin in post-exercise serum may potentially involve in mediating cancer cell apoptosis and inhibiting tumor development. Also, circulating-miRNA expression such as c-miR-133, c-miR-221/22, c-miR126 and c-let-7 derived from muscle or other organs after acute exercise also have been suggested have roles on cancer prevention. Other proposed mechanisms such as enhanced immunity, normalized vascularization, anti-inflammatory, antioxidant etc. derived from physical activity will be discussed in this presentation as well.