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## Exercise Program for DM and Osteoporosis Prevention



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**Abstract.** Non-Communicable Diseases (NCD) are major cause of death. The main types of NCD are cardiovascular diseases and diabetes. Overweight person, who have abnormally high level of triglycerides (TG), Cholesterol (CHOL), and C-Reactive Protein (CRP), may predispose to cardiovascular disease and diabetes mellitus. In addition, immune and neuro-endocrine dysregulation from aging also lead to chronic inflammation. This degenerative inflammation induces CVD, DM and obese. There is evidence that obesity may also increase risk of osteoporosis. It is because obese children, who have low level of high density lipoprotein cholesterol (HDL-C), have low bone mineral content and low bone mineral density (BMD) compared to normal weight children. In addition, reciprocal relationship exists between osteoblast (bone formation cell) and adipocyte differentiation. It is because mechanical loading applied to the bone regulates the differentiation of mesenchymal stem cell (MSC), in bone marrow, into either adipocytes or osteoblast depending on characteristic of mechanical loading. Engaging in exercise regularly could reduce the inflammation process which helps prevent NCD and also osteoporosis. We found that high-intensity intermittent exercise (HIIE) increased serum adiponectin of overweight women after engaging exercise for 4 months. Since adiponectin increases sensitivity of insulin receptor, then HIIE could prevent type II DM. Moreover, HIIE also increased bone formation activity which reduced the decrease in bone density.

**Biography.** Asst. Prof. Dr. Siriporn Sasimontonkul earned a Ph.D. in Biomechanics from Oregon State University and a M.Sc. in Exercise Physiology from Mahidol University. She had established faculty of sports science located in Kamphaeng Sean Campus of Kasetsart University since 2005 and has served as the first dean. Asst. Prof. Siriporn has also established graduate curriculums in Sports Science, Athletic Training and Movement Science. Asst. Prof. Dr. Siriporn has contributed to many societies. She has been the vice president of Asian Council of Exercise and Sports Science and also the Chair of consortium for the dean of faculty of Sports Science and Physical Education. Recently, she was the conference chair of the 8<sup>th</sup> Asia Pacific Conference on Exercise and Sports Science and the 7<sup>th</sup> International Conference in Sport and Exercise Science in 2017. Her research interests include biomechanical analysis with special emphasis on

sports and human movement, impact of loads on bone health and bone injuries. She has also conducted many researches to determine the exercise program for disease prevention and rehabilitation. Asst. Prof. Dr. Siriporn has collaborated with the ministry of health to establish the physical activity guideline for farmers, office workers, fishery and the monk. She has also conducted many projects with various communities to promote exercise for disease prevention.