

How would you prevent coronary heart disease?

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Coronary heart disease should be classified based on the pathogenesis. Coronary atherosclerosis (angina pectoris, myocardial infarction), congenital anomaly (anomalous origin of coronary artery, coronary fistula), inflammation, and functional disorders (endothelial dysfunction, coronary spastic angina) are the representative diseases. Among them, coronary atherosclerosis is the most frequent disorder to be struggled in the world. Modern life style yields easily sedentary and obese people who has a potential of metabolic syndrome. Multiple risk factors lead to ischemic heart disease as acute coronary syndrome and angina pectoris. Treatment for these diseases at acute and chronic stages has developed tremendously. Coronary revascularization with percutaneous coronary intervention (drug-eluting stents) and coronary artery bypass graft have saved lots of patients. Of course, novel technology and technique in this field is expected to be published in this brand-new journal. Although first and secondary prevention research also has shown benefits more efforts to encourage people to pursuit healthy life style would be mandatory. Exercise is the key!

In this context, I have been interested in high-intensity interval training [1-3]. Especially very short duration work-out program for sedentary/elderly people with/without lifestyle-related disease. The current guidelines on cardiac rehabilitation/exercise training recommend endurance exercise with a moderate intensity at 50-85% (mostly 70-85%) of the peak heart rate or anaerobic threshold level for cardiovascular disease and chronic heart failure patients. Such moderate intensity excise could be easily acceptable for almost people who had little experience of exercise. However, endurance training is time-consuming and monotonous exercise using treadmill or bike is sometimes boring. Meanwhile, splint interval training (SIT) has emerged as an applicable exercise program even for people with lifestyle-related disease to improve physical fitness (peak oxygen uptake: VO₂max) as well as metabolic disorders. Original SIT came from Wingate test [4] in which 4-6 times all-out 30 seconds work out interspersed with 3-4 minutes rest. As this protocol is physically demanding, the other modified programs also have developed recently. An interesting report by Metcalfe et al. [5] showed that two 20-seconds all-out sprints observed a mean increase of 14% VO₂max. Changes of such magnitude favorably compare with more strenuous SIT protocols: recent meta-analyses have reported a range of improvements in VO₂max of 3-14 % for SIT studies involving 4-10 repeated Wingate sprints per session [6]. It is well known that high physical fitness decreases cardiovascular risk [7]. In addition, SIT has been reported to increase metabolic capacity in skeletal muscles [8]. Thus, very short work-out might be effective for heart health if the work intensity could be adequately high. I think this concept is very important to spread exercise practice for health even in the aged and/or sedentary people, because it could be almost impossible and sometimes be at risk to perform Wingate-level high-intensity work-out for such people. There are many wearable heart rate trackers to help people to pursuit health. Heart rate during exercise reflects work intensity subsequently makes us plan an appropriate exercise program. Good adherence of exercise using heart rate tracker is beneficial for health and active living. I am a 60-years-old cardiologist and enjoy jogging/running twice a week.

I believe that two 25-26 seconds all-out sprint (upstairs of 106 steps) during 60-90 minutes jogging would improve my physical fitness and skeletal muscle metabolism. Figure 1 shows the heart rate trend during my jogging in a summer humid day. Please notice that peak heart rate during SIT was 175/min.

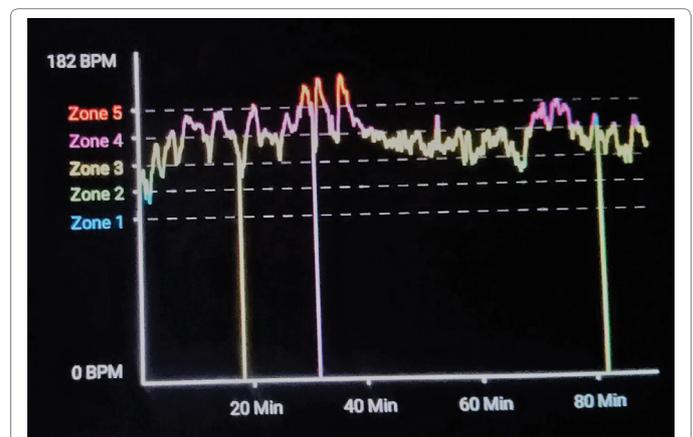


Figure 1: The heart rate trend during my jogging in a summer humid day.

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