

## Symposium I. Prevention in Cardiometabolic Disorder

### The Role of Exercise Training in Cardiometabolic Disorder Patients

**Ridwan M\***

Department of Cardiology and Vascular Medicine Faculty of Medicine Universitas Syiah Kuala -  
RSU dr. Zainoel Abidin, Banda Aceh, Indonesia

\*corresponding author: [mridwan.gieut@gmail.com](mailto:mridwan.gieut@gmail.com)

#### Abstract

Cardiometabolic diseases are still major causes of mortality in modern society. Despite advanced technology involvement, disease is still a major burden. Risk factor modification, including encouraging physical activity has played a pivotrolein disease management. More active or fit individuals tend to develop less coronary heart disease than their sedentary counterparts. If the disease develops in active or fit individuals, it occurs at a later age and tends to be less severe. Exercise training is an approach proven to give rise to improvement of cardiometabolic disorders, in addition to standard medical protocol. Regular exercise improves endothelium, peripheral vessel, left ventricular function and risk factors such as hypertension, diabetes mellitus, dyslipidemia and obesity. Besides, it also improves coronary microcirculation by increasing size and density of arterioles and capillaries. Cardioprotective mechanism of physical activity can be classified into 5 groups: psychological, anti-arrhythmic, anti-thrombotic, anti-atherosclerotic, and hemodynamic. From psychological point of view, exercise training may strengthen social interaction, and reduce psychosocial stress and depression. Its anti-arrhythmic effects include increasing heart rate variability and vagal tone while reducing adrenergic activity. Its anti-thrombotic effects are increasedfibrinolytic activity, while platelet adhesion, fibrinogen and blood viscosity are decreased. Its anti-atherosclerotic effects include enhanced insulin sensitivity, nitric oxyde and HDL level; and decreased LDL level, triglyceride level, blood pressure, adiposity and inflammation. From hemodynamic perspective, physical activity may reverse cardiac remodeling, increase coronary flow, endothelial progenitor cells, myocardial oxygen demand, endothelial dysfunction. Exercise training effect on Diabetes, is shown by Italian Diabetes and Exercise study (IDES). After 12 months study, there were significant improvement in HbA1C, blood pressure, glucose, cholesterol level, waist circumference, BMI, and inflammation.