Understanding the role of sedentary behaviour within the triad of physical activity, cardiometabolic function and cognition

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Through evolution, there is a conserved link between physical activity, cardiometabolic function and brain health. Indeed, for survival, our ancestors had to both out-run and out-plan their peers in the hunt for food, and utilise those gained food resources effectively in order to pass on their genes. This would create environmental pressure favouring physiology that promotes a virtuous cycle between physical activity, cardiometabolic function and cognition. Despite this evolutionary context, modern society is characterised by an environment that encourages prolonged sitting as the default behaviour, with physical activity as a deliberate and planned endeavour. Time is “set aside” for structured exercise, as opposed to it being incidental and the historical nexus between exercise and food procurement has been fundamentally disrupted. The aim of this presentation is to describe the physiological consequences of contemporary behaviours as they typically manifest in various modern scenarios. For example, the sedentary office worker or retiree who predominantly sits over the course of a normal 8-hour day; versus the “active couch potato” who achieves the recommended daily amount of exercise but who sits for prolonged periods outside of their planned exercise; or the “active commuter” who exercises in the morning and may also break up their sitting throughout the working day. This presentation will integrate findings from physical activity and sedentary behaviour research that builds a picture of the link between cardiometabolic and cognitive health, and how future studies and exercise interventions might benefit from considering the combined effects of multiple behaviours along the spectrum of physical activity.

Michael Wheeler is an exercise physiologist and final year PhD student at The University of Western Australia. He became interested in the cardiometabolic effects of exercise during his undergraduate at Dublin City University in Ireland, where he grew up. Here he completed a research project under Dr Donal O’Gorman on the effects of a 12-week diet and exercise intervention on subcutaneous versus visceral fat loss. During his undergraduate, he did a work placement at the Baker Institute in Melbourne, Australia. Here he met his current PhD supervisors, Prof David Dunstan and Prof Daniel Green. The focus of his PhD has been on understanding the combined effects of exercise and sedentary behaviour on cardiometabolic and cognitive function. Michael has never been to Japan. He is very excited to experience Japanese culture and thankful to the Japanese Society of Physical Fitness and Sports Medicine and European College of Sport Science for organising this exchange.