Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Hacking your health: the science of exercise and fitness

Module Coordinator	**Áine Kelly; Discipline of Physiology, School of Medicine**
What will you learn from this Elective?	The benefits of regular exercise are beyond dispute. For the individual, exercise improves physical and mental wellbeing and lowers risk of cardiovascular disease, cancer and diabetes. For society, a healthier population reduces the burden on health services and improves social capital, while participation in and viewership of sport facilitates social engagement and lifts the spirits of the communities we live in. However, physical inactivity of children and adults is a growing national and global societal challenge. In this module, we will combine the expertise of researchers in the disciplines of anatomy, physiology and physiotherapy to draw together elements of exercise physiology, sports science, neuroscience and public health to describe the importance of exercise to health and wellbeing. We will also describe the fundamental physiological responses of the body to exercise in non-athletes and elite athletes.
Student Workload	• Face-to-face contact time is ~12 hours (Introductory session; tutorials; workshops; 1 x 3 hour lab visit). • Online lecture time through the VLE is ~18 lecture hours. • Private study and revision time is 70 hours. **Total student effort hours: 100**
Assessment Components	Assessment 1. Online examination (50%): Incorporates short answer questions, MCQs and EMQs. Assessment 2. Individual practical report (20%): Students will produce a 2-page scientific report of data collected during the module. Assessment 3. Group presentation (30%, including 10% peer mark): Students will be divided into groups to assess a 'hot topic' in exercise science. Each group of students will present their results to the class during dedicated presentation sessions and summarise their findings via a production of an infographic. Reassessment: 1 and 2 will be identical to the first assessment; 3 will be reassessed via an individual essay.
Indicative Reading List	A full reading list or list of resources will be provided to enrolled students Ekelund, U. *et al.* (2016) Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? *Lancet* 38 (10051): 1302-1310 O'Donovan *et al.* (2010) "The ABC of Physical Activity for Health: a consensus statement from the British Association of Sport and Exercise Sciences." *J Sports Sci.* 28(6):573-91 Wilson, M.G. *et al* (2015) Basic science behind the cardiovascular benefits of exercise *Heart* 101:758-765

Learning Outcomes	On successful completion of this module, students should be able to: 1. Describe the key physiological responses to regular exercise and discuss fundamental biological differences between sedentary people, recreational exercisers and trained athletes. 2. State the recommended physical activity guidelines and describe the historical development of these guidelines based on scientific evidence derived from different international populations. 3. Evaluate and justify the benefits of exercise to health and in the prevention of disease. 4. Propose and outline appropriate methods of assessing physical activity, exercise, strength and aerobic fitness on an individual and community level. 5. Assess their own physical activity using validated physical activity questionnaires and wearable technologies and produce a scientific report detailing this activity. 6. Research a current topic in exercise science as part of a group and present the results.