EXERSCI 202
Principles of Tissue Adaptation

(15 points)
(Semester 2, City Campus)

Prerequisite: EXERSCI 103 or SPORTSCI 103

Who should take this course?
Adaptation of the neuro-musculo-skeletal system may happen during any physical activity. A comprehensive scientific understanding requires the integration of knowledge from several core areas: epidemiology, biomechanics, neuroscience, and tissue biology. In this course, we will examine principles of tissue adaptation that occur in nerve, muscle, heart, and bone that occur with increased use, disuse, misuse, and repair after injury, associated with movement and exercise.

Learning Outcomes
- To know the definition of tissue adaptation to exercise, and have a mechanistic conceptualization of the adaptation process from environmental stimuli to tissue response
- Be able to give examples of adaptations of tissue in common circumstances, including training, sedentary behaviour, and recovery from injury
- Be able to describe general classes and properties of movement and exercise-related stimuli that lead to tissue adaptation, and provide specific examples of these including bone stresses and strains, motor practice, aerobic exercise, sedentary behaviour, and resistance training
- Be able to describe modalities and mechanisms of the sensory detection and signaling pathways that lead to tissue adaptation
- Be able to describe general classes and specific examples of tissue responses to stimuli
- Be able to discuss relationships and interactions between adaptive and maladaptive processes
- To understand specific examples of these general principles in the skeletal, cardiac, muscle, and nervous systems.

Learning and Teaching
Students are expected to attend 2x 1-hour lectures per week and several 3-hour laboratory/active-learning session through the semester.

Classes: Wed, Fri 11:00 – 12:00 City (206-209)
Labs: Mon, Tue, Thur 13:30 – 16:30 Tāmaki (731-234)
Teaching Staff

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Plus guest lecturers...

**Assessment***

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<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Laboratory reports (5 labs)</td>
<td>20%</td>
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<tr>
<td>Quiz (in class)</td>
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<tr>
<td>Written assignment</td>
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<td>Mid-term test</td>
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<td>Final exam</td>
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*subject to change*