

Lifestyle Medicine

July 10-22, 2022 | Course No. 1158.1163/4

Course Instructor(s): Dr. Jennifer L. Trilk, PhD, FACSM, DipACLM (University of South Carolina)

Course Coordinator: Prof. Rachel Dankner (Tel Aviv University)

Date & Time: July 10-22, 2022 | S-Th, 8:30-13:15

Final Exam: July 15, 2022 | 9:00-11:00; July 22, 2022 | 9:00-11:00

Location: Room 927 | Sackler Faculty of Medicine

Teaching Assistants: Yonatan Amir (yonatanamir@tauex.tau.ac.il), Maria Zidan, Yulia Maler Yaron, Irit Markus, Karen Ali, Avi Baraz

Course Documents: TAU Moodle or Dropbox <https://bit.ly/3Arjfvq>

Pre-requisites & Intended Audience

Basic courses in Anatomy, Physiology, Pathophysiology. This course is intended for medical students and graduate-level students with appropriate backgrounds.

Academic Credit & Course Requirements

4 academic credits, 2 per week-long module. Participants must pass the final exam with a grade of 60 (D). Separate exams will be given to for each module.

Grade Breakdown

20% - Participation in activities and case studies

80% - Final exam

Breakdown applies to one or both module course participants.

Recommended Reading

Readings are listed below and will be posted to the course site. All PPTs and case studies will be distributed at least one week ahead of class for preview.

Course Description

Healthcare professionals are uniquely positioned to stem the tide of chronic disease through patient education. In order to be effective, clinicians must understand the vital roles exercise, nutrition, sleep, social connectivity, health behavior change, tobacco cessation and responsible alcohol use and other lifestyle interventions play in preventing, treating, and managing disease. Through training, clinicians will be poised to treat and prevent the current pandemic of chronic disease and reduce unsustainable healthcare costs.

The course is aimed at students who already have an understanding of the anatomy, physiology, and pathophysiology of the human body. The course will consist of biomedical and clinical science presentations and small group discussion of exercises, and relevant activities. Topics covered include chronic disease prevention, treatment, and reversal of disease through lifestyle behaviors, and the tools needed to counsel patients on healthy behavior change. Additional topics include self-care and resiliency for the medical student.

Instructor Bio



Dr. Jennifer Trilk, PhD, FACSM, DipACLM

Jennifer Trilk, PhD, FACSM, DipACLM is an Associate Professor at University of South Carolina School of Medicine Greenville and Director of the [Lifestyle Medicine Core Curriculum](#) which trains medical students in nutrition, physical activity/exercise, behavior change, student/patient self-care, and resiliency to prevent and treat top chronic diseases such as obesity, type 2 diabetes, cardiovascular disease and cancer.

Dr. Trilk also co-founded and co-directs the [Lifestyle Medicine Education \(LMEd\)](#), which was awarded the U.S. President's Council on Fitness, Sports and Nutrition Community Leadership Award, Dr. Trilk's second PCFSN award. She also founded and directs [Exercise is Medicine Greenville®](#), a comprehensive 12-week medically-based exercise and lifestyle program for adults with chronic health conditions. In 2016, she represented Exercise is Medicine Greenville as the first program of its kind at a press conference at the [National Press Club in Washington, DC](#), and in 2019 she received the Exercise is Medicine Global Leadership Award from the American College of Sports Medicine.

Dr. Trilk has received national recognition by the Association of American Medical Colleges ([Press Release 2017](#); [Press Release 2018](#)), [U.S. News and World Report](#), [Chicago Tribune](#), and [CNN](#), among others. She also has worked internationally as an invited adjunct professor at the Università degli Studi del Piemonte Orientale (UPO) medical school in Novara, Italy, and as an invited speaker at the [VegMed Online 2021](#) conference in Berlin, Germany. She also was designated to the [Advisory Board for Physicians Association for Nutrition International](#) in 2020, and honored to be elected to the [Board of Trustees for the American College of Sports Medicine](#) in 2021, enhancing her global reach for Lifestyle Medicine education.

In 2017, Dr. Trilk presented the rationale for Lifestyle Medicine training in medical school at a [Capitol Hill congressional briefing](#) in partnership with the American College of Preventive Medicine, in 2014 was awarded her first [U.S. President's Council on Fitness, Sports and Nutrition Community Leadership Award](#), and in 2013 was an invited speaker for the [Bipartisan Policy Center: "Teaching Nutrition and Physical Activity in Medical School: Training Doctors for Prevention-Oriented Care."](#) Dr. Trilk is a Fellow of the [Aspen Global Leadership Network's Health Innovators Fellowship Program](#), a Fellow of the [American College of Sports Medicine](#), and a [Diplomate of the American College of Lifestyle Medicine](#).

Module 1 Timetable (Course Documents: Moodle and <https://bit.ly/3AuHn0d>)

Sunday, July 10 (Day 1)		
Topic	Learning Objectives	Readings and Resources
08:30-09:15	Introduction of Class, Expectations and Check In's	
09:15-09:25	<i>Break</i>	
09:25-10:10	Introduction to Lifestyle Medicine <ul style="list-style-type: none"> Associate sedentary behavior, poor nutrition, and poor self-care with obesity, type 2 diabetes, hypertension, cardiovascular disease, and some forms of cancer. Define Lifestyle Medicine and explain its similarities and differences to other fields of health and medicine 	A Family Physician's Introduction to Lifestyle Medicine ; Pages 4-6
10:10-10:20	<i>Break</i>	
10:20-12:00	The Foundational Components of Lifestyle Medicine: Exercise, Nutrition, Sleep, Social Connectivity, Stress Resiliency, Reduction of Risky Substance Use <ul style="list-style-type: none"> Define the Movement Categories, the FITT Principle and Exercise Prescription, Cardiorespiratory Fitness, VO2 Max. List the Exercise is Medicine statistics Describe how nutritional information is more than Protein, Carbs and Fats. Understand Sleep Hygiene Understand Stress and Resiliency, Social Connectivity Define Risky Substance Use 	A Family Physician's Introduction to Lifestyle Medicine ; Pg 7-42 <ul style="list-style-type: none"> Overview of the 6 pillars of lifestyle medicine for reference. Testable material will be in the PPT
12:00-12:10	<i>Break</i>	
12:10-13:15	Activity – Personal Goals <ul style="list-style-type: none"> Utilize your chosen App tracker to complete your Lifestyle Goals Set a SMART Goal for the next two weeks assessment and evaluate your nutrition behavior and rate your stage of change; set measurable goals for improvement. Review and discuss personal goals and challenges (Activity) Example: Evaluate your exercise behavior and rate your stage of change; use the FITT principle to set measurable goals for improvement. 	<p><u>In Class Resources:</u> https://www.exerciseismedicine.org/wp-content/uploads/2021/02/EIM-Prescription-2018-e-form.pdf</p> <p>Choose one of these 5 apps and log in food diary for 2 days:</p> <p>https://www.makeuseof.com/tag/food-diary-apps/</p> <ul style="list-style-type: none"> Be ready to discuss in class which one you chose and why, as well as your rating of the app for both you and your patient.

Monday, July 11 (Day 2)			
	Topic	Learning Objectives	Readings and Resources
08:30-09:15	Obesity, BMI and Body Composition	<ul style="list-style-type: none"> Describe BMI, Body Composition, and the cardiometabolic maladies and co-morbidities associated with decreased lean tissue and increased fat mass including visceral adipose tissue. 	Kravitz and Heyward- Getting a Grip on Body Composition
09:15-09:25	<i>Break</i>		
09:25-10:10	Obesity Case Study		
10:10-10:20	<i>Break</i>		
10:20-11:05	Muscular, Energetics, Strength and Endurance Training	<ul style="list-style-type: none"> Explain the recommended FITT principle, as well as overload, specificity, and reversibility associated with the development of muscle strength and endurance. Describe the aerobic and resistance training adaptations in muscle structure and compare effects on fiber type. Discuss the contribution of muscle hyperplasia and hypertrophy to muscular strength and endurance Differentiate between the neural-motor, contractile, and elastic component contributions to muscle strength, and endurance. 	Adaptations to Endurance Training: https://www.gssiweb.org/en-ca/article/sse-54-muscle-adaptations-to-aerobic-training Adaptations to Strength Training: https://www.sportsci.org/encyc/adaptex/adaptex.html
11:05-11:15	<i>Break</i>		
11:15-12:00	Musculoskeletal Health through the Lifespan	<ul style="list-style-type: none"> Describe how lifestyle choices throughout the lifespan affects skeletal muscle structural, functional, and metabolic health. Differentiate changes commonly observed between men and women. 	Taafee and Marcus 2000- Musculoskeletal health and the older adult Grote et al. 2019- Regulatory Mechanisms and Clinical Manifestations of Musculoskeletal Aging
12:00-12:10	<i>Break</i>		
12:10-13:15	Lifestyle Medicine and Reproductive Health	<ul style="list-style-type: none"> Describe the effects of obesity on male and female fertility. Explain the obesity, polycystic ovarian syndrome (PCOS)/infertility link in women. Explain the mechanisms in 	Chura and Norman 2007- Impact of lifestyle factors on ovarian function and reproductive health in women KidsHealth- Eating During Pregnancy

		<p>which exercise and nutrition affect risk of gestational diabetes mellitus, hypertension and preeclampsia.</p> <ul style="list-style-type: none"> • Cite the current nutritional recommendations for adult women during preconception, pregnancy, and lactation; identify at least four types of foods or supplements that should be included or avoided in the diet during this period. • Understand the effects of exercise on maternal gestational low back pain, diastasis, and musculoskeletal laxity. List the absolute and relative contraindications to exercise during pregnancy. 	<p>ACSM Statement on Exercise During Pregnancy</p>
Tuesday, July 12 (Day 3)			
Topic		Learning Objectives	Readings and Resources
08:30-09:15	Lifestyle Medicine, Lipoprotein and CV Health	<ul style="list-style-type: none"> • Describe Lifestyle effects on plasma lipoprotein metabolism and cardiac remodeling in relation to risk of cardiovascular disease (CVD). 	<p>Video- Cholesterol and lipoprotein metabolism</p> <p>Nutrition Facts videos:</p> <ul style="list-style-type: none"> • http://nutritionfacts.org/video/heart-disease-starts-in-childhood • http://nutritionfacts.org/video/blocking-the-first-step-of-heart-disease <p>Braun and Rosenson 2019- Effects of exercise on lipoproteins and hemostatic factors</p> <p>Exercise Training Cardiovascular Adaptation video:</p> <ul style="list-style-type: none"> • Anatomy & Physiology Adaptations to Exercise: The Cardiovascular System
09:15-09:25	<i>Break</i>		
09:25-11:05	Cardiovascular Case Studies		
11:05-11:15	<i>Break</i>		
11:15-12:00	Lifestyle Medicine and Respiratory Health	<ul style="list-style-type: none"> • Describe Lifestyle effects on the structure and function of the pulmonary and Respiratory system. 	<p>Videos (15 min total):</p> <ul style="list-style-type: none"> • Anatomy & Physiology Respiratory System 06 - Responses to Exercise • A&P Respiratory System 07 - Adaptations to Exercise

			Florian 2009- Nutrition and COPD - Dietary Considerations for Better Breathing
12:00-12:10	<i>Break</i>		
12:10-13:15	Pulmonary Case Studies		
Wednesday, July 13 (Day 4)			
Topic		Learning Objectives	Readings and Resources
08:30-10:10	Lifestyle Medicine and Immunology	<ul style="list-style-type: none"> Discuss how chronic low grade inflammation increases risk for cardiovascular disease, certain types of cancer, type two diabetes, sarcopenia and dementia. Discuss the anti-inflammatory influence of exercise training and healthy eating, including possible mechanisms. 	<p>Gleeson et al. 2011- Effects of exercise on inflammation</p> <p>Franz 2014- Nutrition, Inflammation, and Disease</p> <p>For reference: Harvard Health- Foods that fight inflammation</p>
10:10-10:20	<i>Break</i>		
10:20-12:00	Lifestyle Medicine and the Pancreas (Type 2 Diabetes)	<ul style="list-style-type: none"> Describe the mechanisms by which obesity and sedentary behavior leads to insulin resistance, beta-cell destruction, and type 2 diabetes. Describe the mechanisms by which physical activity and a low saturated fat diet improves blood glucose regulations, reduces the daily insulin dosage, and decreases the risk of diabetes-associated complications in people with type 1 and type 2 diabetes. 	<p>Martín-Peláez et al. 2020- Mediterranean Diet Effects on Type 2 Diabetes Prevention, Disease Progression, and Related Mechanisms. A Review; Subchapter 6</p>
12:00-12:10	<i>Break</i>		
12:10-13:15	Endocrine Case Studies		
Thursday, July 14 (Day 5)			
Topic		Learning Objectives	Readings and Resources
08:30-10:10	Lifestyle Medicine, GI and Liver Health (Non-Alcoholic Fatty Liver Disease)	<ul style="list-style-type: none"> Identify Lifestyle factors and mechanisms that contribute to a healthy digestive tract and help with prevention of common digestive symptoms/illnesses (i.e., GERD, IBS, ulcers, indigestion, constipation, and some forms of cancer). Describe the mechanisms by which NAFLD can be treated 	<p>Healthline- Preventing Digestion Problems</p> <p>Marks' Basic Medical Biochemistry: A Clinical Approach: Chapter 33 Metabolism of Ethanol</p>

		<p>through increasing exercise and decreasing visceral adipose tissue.</p> <ul style="list-style-type: none"> • Describe the pathogenesis, gross and microscopic morphologic manifestation, clinical manifestations, diagnosis, consequences and complications of nonalcoholic liver disease, nonalcoholic steatohepatitis, and cirrhosis. • Describe the mechanism(s) through which alcohol consumption leads to the development of alcoholic hepatitis and cirrhosis • Describe the dysregulation of metabolism in the fed and fasting state that can lead to fatty liver disease. 	
10:10-10:20	<i>Break</i>		
10:20-12:00	GI and Liver Case Studies		
12:00-12:10	<i>Break</i>		
12:10-13:15	Activity – Self Care #1	<ul style="list-style-type: none"> • Assess personal risk for burnout. • Identify a personal goal for maintaining balance and wellness during the pre-clinical years. 	No Reading
13:30-14:30	<u>Optional</u> review session	<ul style="list-style-type: none"> • Assess knowledge of Week #1 material 	
Friday, July 15 (Final Exam)			
09:00-11:00	Final Exam- Week 1 material only		

Module 2 Timetable (Course Documents: Moodle and <https://bit.ly/3nDqCrW>)

Sunday, July 17 (Day 6)			
Topic		Learning Objectives	Readings and Resources
08:30-10:10	Week #1 Review	<ul style="list-style-type: none"> Review of Week #1 material and introduction to lifestyle medicine 	
10:10-10:20	<i>Break</i>		
10:20-12:00	Counseling in Lifestyle Medicine: Prochaska and Motivational Interviewing, 5As, Shared Decision Making	<ul style="list-style-type: none"> Recognize the importance of communication in establishing an empathetic relationship with a patient. Identify fundamental strategies for effective interviewing and capturing patient's story. Demonstrate an understanding of the principles and skills for therapeutic interviewing. 	A Family Physician's Introduction to Lifestyle Medicine ; Page 95
12:00-12:10	<i>Break</i>		
12:10-13:15	Behavior Change – Applied (activity)	<ul style="list-style-type: none"> Implement effective Lifestyle Medicine counseling techniques (Motivational interviewing, behavior change, shared decision making) based on behavior change theories. 	No Reading
Monday, July 18 (Day 7)			
Topic		Learning Objectives	Readings and Resources
08:30-10:10	Lifestyle Medicine and Renal Health	<ul style="list-style-type: none"> Describe the association and mechanisms between Lifestyle factors, obesity and the risk of chronic kidney disease. Identify lifestyle modifications and interventions, including dietary changes, for prevention and treatment of chronic kidney disease. 	Bland 2016- Kidney Disease Personalized Lifestyle Health Care Makes a Big Difference
10:10-10:20	<i>Break</i>		
10:20-11:05	Renal Case Studies		
11:05-11:15	<i>Break</i>		
11:15-12:00	Social Determinants of Health as related to Lifestyle Medicine	<ul style="list-style-type: none"> Understand how the SDH affect your treatment of patients with chronic conditions 	A Family Physician's Introduction to Lifestyle Medicine ; page 80
12:00-12:10	<i>Break</i>		

12:10-13:00	Activity – Self Care #2	<ul style="list-style-type: none"> Apply mindfulness, conscious decision making and healthy boundaries that enrich personal resilience, manage stress and prevent burnout in pre-clinical and clinical years. 	No Reading
13:00-13:15	Introduction to Culinary Medicine Activity		
Tuesday, July 19 (Day 8) – Sheba Medical Centre; Instructor: Dr. Rani Polak			
Topic		Learning Objectives	Readings and Resources
9:00-10:00	Introduction to Culinary Medicine Instructor: Dr. Rani Polak		
10:00-14:00	Culinary Medicine Activity	<ul style="list-style-type: none"> Understand the differences in dietary patterns and their associations with chronic disease 	
Wednesday, July 20 (Day 9)			
Topic		Learning Objectives	Readings and Resources
08:30-10:10	Lifestyle Medicine and Brain Health	<ul style="list-style-type: none"> Summarize the effects of exercise on the cognitive functions of the brain. Describe the role of exercise in the process of neurogenesis and neuronal repair. Explain the role of nutrition on neurogenesis and brain repair. 	<p>Ibeas et al. 2021- Hypothalamus-skeletal muscle crosstalk during exercise and its role in metabolism modulation</p> <p>Perez-Taboada et al. 2021- Diabetes Causes Dysfunctional Dopamine Neurotransmission Favoring Nigrostriatal Degeneration in Mice</p> <p>Video- Preventing Alzheimer's Disease with Plants</p>
10:10-10:20	<i>Break</i>		
10:20-12:00	Neurocognition Case Studies		
12:00-12:10	<i>Break</i>		
12:10-13:15	Lifestyle Medicine in Practice	<ul style="list-style-type: none"> Recognize the physician's role in advocating for health at the community and population health levels. Use Lifestyle Medicine practice, tools, and resources to facilitate behavior change interventions. Apply Lifestyle Medicine evidence-based literature and practice to help patients and their family manage and sustain behavior change. 	<p>A Family Physician's Introduction to Lifestyle Medicine; Page 95</p> <p>Lianov et al. 2010- Physician's Competencies for Prescribing Lifestyle Medicine</p>

		<ul style="list-style-type: none"> Care for patients through collaboration with a Lifestyle Medicine- focused inter-professional team Collaborate with other health professionals, including behavioral specialists, dieticians, health educators, and fitness trainers to create an action plan using a multidisciplinary approach. 	
Thursday, July 21 (Day 10)			
	Topic	Learning Objectives	Readings and Resources
08:30-10:00	Week #2 Formative Quiz and Quiz Review	<ul style="list-style-type: none"> Assess knowledge of Week #2 material 	
10:00-10:10	<i>Break</i>		
10:10-11:50	Lifestyle Medicine and Cancer	<ul style="list-style-type: none"> Assess knowledge of Week #2 material Recognize the contribution of obesity, insulin resistance, nutritional insufficiencies, and a sedentary lifestyle to the tumor environment. Explain the etiology of cancer prevention through nutrition and diet, calorie restriction, and exercise, including effects on inflammatory markers, DNA repair, and improved insulin sensitivity. 	<p>Videos:</p> <ul style="list-style-type: none"> https://nutritionfacts.org/video/how-to-win-the-war-on-cancer https://nutritionfacts.org/video/how-not-to-die-from-cancer/ <p>Anand et al. 2008- Cancer is a Preventable Disease that Requires Major Lifestyle Changes.</p> <p>Summary of the ACS Guidelines on Nutrition and Physical Activity</p>
11:50-12:00	<i>Break</i>		
12:00-12:50	Cancer Case Studies		
12:50-13:00	Final Discussion – Check Outs		
13:00-13:20	End of course ceremony and class photo		
Friday, July 22 (Final Exam)			
09:00-11:00	Final Exam- Week 2 material only		