SERVIÇO PÚBLICO FEDERAL
UNIVERSIDADE FEDERAL DE SANTA CATARINA
CENTRO DE DESPORTOS
PROGRAMA DE PÓS-GRADUAÇÃO EM EDUCAÇÃO FÍSICA
CAMPUS REITOR JOÃO DAVID FERREIRA LIMA - TRINDADE - CEP 88040-970 - FLORIANÓPOLIS / SC
TELEFONE +55 (48) 3721-4774
ppgef@contato.ufsc.br | ppgef.ufsc.br

TEACHING PROGRAM

1. IDENTIFICATION

Course: **Special Topic: Endurance exercise and air pollution**
Code: **DEF**
Number of Credits: **02 Theoretical Credits**
Workload: **30 Hours/Class**
Level: **Masters and PhD in Physical Education**

Professor in charge: Ramon Cruz, PhD (UFSC),
Invited professors: Joseph Welch, PhD (University of Birmingham),
Sarah Koch, PhD (University of Basel).

2. SYLLABUS

Basic mechanisms of endurance exercise under air pollution condition. Negative consequences of air pollution on health and endurance performance. Strategies to reduce risk of air pollution during endurance exercise. Sex-related differences in respiratory physiology.

3. OBJECTIVES

To present and discuss how the interface endurance exercise, air pollution and basic sex-related differences in respiratory physiology could be connected.

4. CONTENT

I. Basic mechanisms of endurance exercise under air pollution condition.
- Historical perspective, different types of pollutants and their sources, exposure during effort, acute physiological responses, chronic health effects of air pollutants.

II. Strategies to reduce risk of air pollution during endurance exercise.
- Monitoring pollution levels before and during the practice, Indoor/outdoor possibilities, the role of exercise intensity/duration, acclimation, and training, Using respirators and face masks.

III. Sex-related differences in respiratory physiology
- Male and female basic respiratory responses to endurance exercise and during recovery.

IV. Final meeting
- “Brainstorming” meeting to discuss common scientific point between the contents and raise further questions concerning the interface endurance exercise, air pollution and sex physiology related outcomes.

5. SCHEDULE

TOPIC	DATE	TIME (BRT)	LOCAL	PROFESSOR
I	1st August	14:00 – 17:00	Virtual Meeting	Prof. Ramon Cruz
II	2nd August	14:00 – 17:00	Virtual Meeting	Prof. Sarah Koch
III	5th August	14:00 – 17:00	Virtual Meeting	Prof. Joe Welch
IV	6th August	14:00 – 17:00	Virtual Meeting	All Professors
V	Due to 30th Aug.	14:00 – 17:00	By email	Prof. Ramon Cruz

6. REFERENCES

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3. Cruz R, Lima-Silva AE, Bertuzzi R, Hoinaski L. Exercising under particulate matter exposure: Providing theoretical support for lung deposition and its relationship with COVID-19. *Environmental Research*. 2021;202:111755. doi:10.1016/j.envres.2021.111755
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5. Giles LV, Brandenburg JP, Carlsten C, Koehle MS. Physiological Responses to Diesel Exhaust Exposure Are Modified by Cycling Intensity: *Medicine & Science in Sports & Exercise*. 2014;46(10):1999-2006. doi:10.1249/MSS.0000000000000309
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8. Pasqua L, Damasceno M, Cruz R, et al. Exercising in Air Pollution: The Cleanest versus Dirtiest Cities Challenge. *IJERPH*. 2018;15(7):1502. doi:10.3390/ijerph15071502
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13. Dominelli, P. B., & Sheel, A. W. (2024). The pulmonary physiology of exercise. Advances in Physiology Education, 48(2), 238-251.