

## Information sheet for the course Exercise Physiology

<b>University:</b> <i>Alexander Dubček University of Trenčín</i>	
<b>Faculty:</b> <i>Faculty of Health Care</i>	
<b>Course unit code:</b> <i>FyzTC/d</i>	<b>Course unit title:</b> <i>Exercise Physiology</i>
<b>Type of course unit:</b> <i>compulsory</i>	
<b>Planned types, learning activities and teaching methods:</b> <i>Seminar: 1 hour weekly/ 13 hours per semester of study; full-time</i>	
<b>Number of credits:</b> <i>1</i>	
<b>Recommended semester:</b> <i>5<sup>th</sup> semester in the 3<sup>rd</sup> year (full-time)</i>	
<b>Degree of study:</b> <i>I (bachelor)</i>	
<b>Course prerequisites:</b> <i>Anatomy II., Physiology</i>	
<b>Assessment methods:</b> <i>To obtain credit for the course (100 points), a student must:</i> <ul style="list-style-type: none"> <li>- <i>Be actively present in the course – students are allowed two (2) free unexcused absences.</i></li> <li>- <i>Acquire skill to describe correctly the impact of physical load on the human body. Apply their gained knowledge to the presentation about the response of human organism to high physiological demands during specific load by particular physical activity.</i></li> <li>- <i>Pass a written test and pass an oral exam (50 points),</i></li> </ul> <i>To obtain A, a student must score minimum 90, to obtain B a student must score minimum 80, to obtain C, a student must score minimum 75, to obtain D, a student must score 65, and to obtain E, a student must score 55. The credits are not granted to the students whose grade point average is 58 or lower.</i>	
<b>Learning outcomes of the course unit:</b> <i>A student will gain knowledge about the response of human organism to high physiological demands of human body during physical load. The emphasis is put on understanding acute and chronic responses of the various systems of human body to physical burden and physical environmental conditions. A student is able to describe the changes of cardiovascular, respiratory and muscular system of a human being during physical load and is able to depict the impact of the external environment, and altitude on human organism during physical load. A student acquires the knowledge about the structure and function of muscles, about the energy production for the work of muscles, about the anaerobic and aerobic process of resynthesis in energy substrates. A student is able, based on gained knowledge, apply and model the impact of particular movement activity on the physiological requirements of the organism. Based on the acquired knowledge of physiological requirements on organism they can defend and explain health effect of movement activity for human being.</i>	
<b>Course contents:</b> <ol style="list-style-type: none"> <li>1. <i>Introduction to exercise physiology.</i></li> <li>2. <i>Skeletal muscular structure and function of muscles, determining the proportion of muscle fibres.</i></li> <li>3. <i>The sources of energy for muscle work, energy production for muscular work.</i></li> <li>4. <i>Energy expenditure, energy substrates, sources of energy coverage during increasing load.</i></li> <li>5. <i>Mechanical efficiency of muscular work and economy of movement.</i></li> <li>6. <i>The effect of physical load on organ systems of:</i> <ul style="list-style-type: none"> <li>- <i>cardiovascular system,</i></li> <li>- <i>ventilation system,</i></li> <li>- <i>VO<sub>2</sub> max,</i></li> <li>- <i>muscular system.</i></li> </ul> </li> <li>7. <i>Load and adaptation, excessive load.</i></li> </ol>	

8. *Physical activity and body weight.*
9. *Metabolic processes in the physical load.*
10. *Measurement of functional proficiency, testing.*
11. *Types of physical exercise.*
12. *The impact of the external environment, and altitude on the human organism.*  
*Thermoregulation, acclimatization, and high altitude training.*
13. *The impact of hyperbaric conditions on the human organism.*

**Recommended of required reading:**

**Key reading:**

1. DOBŠÁK, P. – SIEGLOVÁ, J. a kol.: 2009. *Klinická fyziologie tělesné zátěže*. Brno: Masarykova univerzita, 2009. 98p. ISBN: 978-80-210-4965-9.
2. HAVLÍČKOVÁ, L. a kol.: 2004. *Fyziologie tělesné zátěže I. Obecná část*. Praha: Nakladatelství Karolinum, 2004. 203p. ISBN 80-7184-875-1.
3. HAMAR, D. – LIPKOVÁ, J.: 1996. *Fyziológia telesných cvičení (ÚK Bratislava, 1996)*.

**Recommended reading:**

1. DOVALIL, J. a kol.: 2002. *Výkon a trénink ve sportu*. Praha: Olympia, 2002. 331 s. ISBN 80-7033-760-5.
2. MÁČEK M. – VÁVRA J.: 1988. *Fyziologie a patofyziologie telesné zátěže (Praha, 1988)*.
3. ŠTULRAJTER, V. a BROZMANOVÁ, I.: 1990. *Fyziológia telesných cvičení a športovej výkonnosti. [Vysokoškolské učebné texty]*. Bratislava: FTVŠ UK, 1990. 161 p. ISBN 80-223-0258-9.
4. CHALOUPKA, V., ELBL, L. a kol.: 2003. *Zátěžové metody v kardiologii*. Praha: Grada Publishing, 2003. 293 p. ISBN 80-247-0327-0.
5. CHALOUPKA, V.: 2000. *Zátěžové testy v kardiologii. Zátěžová elektrokardiografie*. *Cor Vasa*, 2000, roč. 42, p. K43 – K49. ISSN -0010-8650.
6. JANČÍK, J.: 2005. *Rehabilitace po infarktu myokardu a revaskularizaci u starších nemocných – editorial*. *Vnitřní Lék.*, 2005, roč. 51, p. 388–389. ISSN 0042-773X.
7. MÁČEK, M., MÁČKOVÁ, J.: 1997. *Fyziologie tělesných cvičení*. Brno: Masarykova univerzita, 1997. 112 s. ISBN 80-210-1604-3.
8. NOVOTNÝ, J. a kol.: 2003. *Kapitoly sportovní medicíny*. Brno: Paido, 2003. CD: ISBN 80-7315-064-6.
9. PLACHETA, Z., SIEGLOVÁ, J., ŠTEJFA, M. a kol. *Zátěžová diagnostika v ambulanci a klinické praxi*. Praha: Grada Publishing, 1999. 286 p. ISBN 80-7169-271-9.
10. WILMORE, J. H., COSTIL, D. L.: 2004. *Physiology of sport and exercise. Third edition. Human Kinetics*. 2004. 726 s. ISBN 0-7360-4489-2.
11. WILHELM, Z. a kol.: 2003. *Stručný přehled fyziologie člověka pro bakalářské studijní programy*. Brno: Masarykova univerzita, 2003. 15 p. ISBN 80-210-2837-8.

**Language:** Slovak

**Remarks:**

**Evaluation history:**

A	B	C	D	E	FX

**Lectures:**

*PaedDr. Lubomír Král, PhD.*

**Last modification:** 22.4.2014

**Supervisor:** *doc. MUDr. Juraj Čelko, PhD.*