

## Course Description

### Health Psychophysiology and Psychoneuroimmunology

Leading Lecturer: Adrien Rigó

<b>Aim of the course</b>
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#### **Aim of the subject**

To learn about bio-medical, psychophysiological and psychoneuroimmunological backgrounds, and about psychophysiological pathological features of psychosomatic and somatization disorders and diseases, within the frame of the bio-psycho-social theory.

#### **Acquired competencies**

##### **Knowledge**

The student:

- Knows regulation of the visceral organs, including structure and operation and of input and output and central regulation of the visceral organs, respectively.
- Should be familiar with the psychophysiological aspects of emotions and motivations and with the modern interpretation of the homeostasis.
- Has systems-based knowledge about the relationship of health and disease.
- Is familiar with psychophysiology and complex organization of pain, knows about main therapeutic methods treating pain.
- Knows structure and function of the immune system, and the possible relationships within the immune-neuroendocrine network.
- Becomes familiar with results of the psychoneuroimmunological research, especially regarding stress, life-style, and psychiatric dysfunctions.
- Gets an overview about the immunological consequences of different psycho-social interventions.

##### **Attitude**

The student's:

- Attitude is based on the systems theory.
- Preferences are organized around the bio-psycho-social theory
- Interest is wide and multifunctional, being open to analyzing and understanding psychosomatic and somato-psyche processes.

##### **Abilities**

The student becomes able:

- To orient in the relevant literature with proper criticism.
- To understand and handle psychophysiological and psychoneuroimmunological publications.

- To co-operate with the physicist staff in diagnosing and treating psychosomatic patients, and represents an interactive approach.

## Content of the course

### Major topics

#### I. Psychophysiology block

- Structure and operation of the visceral system.
- Visceral input, sensation and perception.
- Central nervous aspects and outputs of the visceral regulation.
- Mechanisms of drives, emotions and motivations.
- Homeostasis and variostasis.
- Psycho-social mechanisms in the background of visceral functions.
- Disorders and maladaptive accommodation of the visceral functions.

#### II. Aging and pain block

- Process and theories of aging.
- Psychophysiology of aging.
- Definitions, organization and models of pain.
- Nociception and pain types.
- Measuring and alleviating pain.
- Psychological management of pain.

#### III. Stress-plasticity block

- Psychophysiology of stress (repetition).
- Possibilities and consequences of long-term modification of the stress-axes (programming stress-axes) regarding mental and somatic health.
- Individual differences and the role of individual-environment interactions in stress reactivity.
- Advantages and disadvantages of plasticity; changes of central nervous mechanisms in the background of somatic and somatization disorders (time-dependent sensitization, olfactory-limbic model, sickness model, neurogenic inflammation model); epigenetic results.

#### IV. Psychoneuroimmunological block

- Structure, operation of the immune system and measurement methods.
- Relationships of the immune functions to the neuro-endocrine system.
- Effect of stress on the immune system.
- Relationship of life-style (nutrition sleep, drug-use, physical activity) to the immune functions.
- Immune features in psychiatric disorders.
- Effects on the immune functions of psycho-social interventions.

### Learning activities, learning methods

Frontal lectures with an emphasis on proper demonstrations and on interactive thinking by presenting short tasks.

## Evaluation of outcomes

### Learning requirements, mode of evaluation, criteria of evaluation:

requirements

- Being familiar with the topics of the lectures.
- Knowing the compulsory literature.

mode of evaluation:

Type of the final mark: written and oral exam (marks 1 to 5)

Written exam of the Psychophysiology and Pain blocks (40%)

Written exam of the Stress-plasticity and Immune system blocks (30%)

Oral exam: Interpretation of a psychoneuroimmunological publication and its association to the material of the whole course. (30%)

Aspects of the evaluation:

Extent of the basic knowledge.

Ability to apply the knowledge in evaluating and interpreting scientific publications.

## Reading list

### Compulsory reading list

- Ádám, G. *Visceral Perception: Essay on the Doorstep of Cognition*. Plenum Press, New York, 1998.
- Bower, J.E., Irwin, M.R. Mind–body therapies and control of inflammatory biology: A descriptive review. *Brain Behav. Immun.* (2015), <http://dx.doi.org/10.1016/j.bbi.2015.06.012>
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- Skinner, M. (2014). Environmental stress and epigenetic transgenerational inheritance. 12:153. <http://www.biomedcentral.com/1741-7015/12/153>
- Zachariae, R. (2009). Psychoneuroimmunology: A bio-psycho-social approach to health and disease. *Scandinavian Journal of Psychology*, 50, 645–651.

### Recommended reading list

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- Ader, R. Historical perspectives on psychoneuroimmunology. In: Friedman, H., Klein, T.W. and Friedman, A.L. Psychoneuroimmunology, Stress and Infection. pp. 1-24. CRC Press, Boca Raton, FL, 1996.
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- Bahnson, C.B. Psychosomatic issues in cancer. In: Gallon, R.L. (ed.): The Psychosomatic Approach to Illness. pp. 53-87. Elsevier Biomedical, New York, 1982.
- Birbaumer, N. and Öhman, A. The Structure of Emotion. Psychophysiological, Cognitive and Clinical Aspects. pp. 31-45. Hogrefe and Herber Publ., Seattle, 1993.
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