



DEPARTMENT OF CLINICAL NEUROSCIENCE

K8F5639, The Science of the Placebo Effect, 1.5 credits (hec)

Placeboeffektens vetenskapliga grund, 1,5 högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus is approved by the The Committee for Doctoral Education on 2023-12-21, and is valid from Spring semester 2024.

Responsible department

Department of Clinical Neuroscience, Faculty of Medicine

Prerequisite courses, or equivalent

No prerequisite courses, or equivalent, demanded for this course.

Purpose & Intended learning outcomes

Purpose

The overall aim of this course is to give an overview of one the most striking examples of mind-body interactions: the placebo effect. Placebo responses are inherent across many clinical contexts and common in medical research. Placebo controls have played an important role in the development of evidence-based treatments. Notably, the placebo effect elucidates the mechanisms behind mind-body communication in certain medical conditions.

Intended learning outcomes

After the course, the student should be able to:

- 1) explain how mental processes may influence disease symptoms via placebo treatments in several different medical conditions and exemplify the underlying psycho-neuro-biological mechanisms.
- 2) reflect on the boundaries for when the placebo effect may occur and under what

circumstances it is unlikely to occur (e.g. which medical conditions can be affected, is there need for deception, what cognitive abilities are needed).

3) give a brief historical background to the randomized placebo-controlled trial as a method for assessing the effect of pharmacological treatments.

4) critically discuss scientific strengths and weaknesses of the randomized placebo-controlled trial, and to point to possible alternative trial designs.

5) reflect on the ethical dilemmas regarding the use of placebos and/or deception in medicine.

Course content

The course aims to provide a comprehensive overview of the psychological, neurological, and immunological mechanisms associated with placebo effects in different medical conditions, e.g., pain, psychiatric problems and neurological disorders. The course will also include the mechanisms of negative placebos, called the nocebo effect. In addition to placebo and nocebo mechanisms, the course will provide the historical context to the use of placebos, knowledge about current guidelines, and discuss ethical dilemmas regarding use of placebos.

Forms of teaching and learning

The course will contain a mixture of lectures and individual work. Students from different research fields will get the chance to work together and help each other in a group exercise. The literature will consist of a number of research articles and chapters from a book on the science of placebo effects.

1. Lectures (physical but some on zoom)
2. Interactive seminars where the students participate in group discussions, presentations to their peers, and peer-feedback
3. Reading of articles where the students will “specialize” in a particular article on a particular medical condition and present the results to the other students as “experts”.
4. Participate in a seminar with presentation of a report (see Examination).

Language of instruction

The course is given in English

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

Attendance will be mandatory and if not possible IRL it can be solved with online attendance in certain cases. If a student cannot attend one of the lectures, they can compensate by watching a recorded lecture and then writing an assignment. Absence from more than 50% of activities is not approved.

Forms of assessment

To address ILO 1, 2, 3: The students are asked to write a report, individually or together with another student, that consists of a mock research plan on a placebo/nocebo topic. The report should include a short literature review that elucidates the current knowledge about placebo mechanisms, and knowledge gaps. The report shall be presented by the student at a seminar (mandatory presence).

To address ILO 4, 5: A mandatory journal club discussion of an article, where the students will be given the chance to discuss the strengths and weaknesses of the study, point to possible alternative trial designs and reflect on the ethical dilemmas of the study.

Course literature

Recommended reading:

Book

Placebo Effects: Understanding the mechanisms in health and disease 1st Edition
by Fabrizio Benedetti (Author) ISBN: 978-0199559121

Articles

Benedetti et al., Teaching neurons to respond to placebos. *J Physiol*, (2016), 594(19): 5647-60. PMID: 26861164

De la Fuente Fernandez et al., Expectation and dopamine release: mechanism of the placebo effect in Parkinson's disease. *Science* (2001), 293(5532): 1164-6. PMID: 11498597

Goebel MU, et al. Behavioral conditioning of immunosuppression is possible in humans. *FASEB J*. 2002 Dec;16(14):1869-73. doi: 10.1096/fj.02-0389com. PMID: 12468450.

Hadamitzky M, et al. Placebo Effects in the Immune System. *Int Rev Neurobiol*. 2018;138:39-59. doi: 10.1016/bs.irn.2018.01.001. Epub 2018 Mar 2. PMID: 29681334.

Kaptchuk et al. Placebos in chronic pain: evidence, theory, ethics, and use in clinical practice. *BMJ*, 2020, 370:m1668. PMID: 32690477

Lasselin J, et al. Sickness behavior is not all about the immune response: Possible roles of expectations and prediction errors in the worry of being sick. *Brain Behav Immun*. 2018 Nov;74:213-221. doi: 10.1016/j.bbi.2018.09.008. Epub 2018 Sep 11. PMID: 30217536.