



### From animal magnetism to neurobiology: how placebo affects the brain, modulates physiologic processes and impacts health

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The aim of the talk is to review the background, methods and key insights into the underlying mechanisms of the placebo effect (PE).

PE is a psychobiological improvement in a recipient of a placebo – a substance or an intervention without inherent therapeutic activity. Key to PE is the healing–fostering psychosocial context of treatment. Based on the use of different experimental paradigms and methods, PE has been shown to entail changes in electrical and metabolic activity of the brain, changes in release of neurotransmitters, hormones and cytokines leading to improved function in the recipient. PE has been found to modify treatment outcomes in pain, mood disorders, addiction and motor disorders. Placebo exerts its effects through conscious expectations and unconscious conditioning. Conditioning also produces PE in animals. The open–hidden treatment paradigm enables an estimate of PE in treatment efficacy without the actual use of a placebo. The open–hidden studies have shown that several treatments are less effective when PE is abolished. Also, cognitive disorders with impaired prefrontal connectivity display a dramatic reduction in PE and concurrent reduction in efficacy of treatment. Sensible use of the PE without patient deception is feasible in medical practice, and is desirable in a therapeutic relationship.

Moderator: Prof. **Grega Repovš**

Čas: **17. oktober, 18:00 – 20:00**

Kraj: **Seminar Nevološke klinike, Zaloška 2, Ljubljana**

### Physical and cognitive performance changes caused by expectation of enhancement

**Michael Kecht**, BS  
University of Vienna, Department of Cognitive Science

We studied changes in physical and cognitive performance caused by expectation of substance–induced enhancement. Healthy young volunteers ( $n = 21$ ) performed short tests of physical (muscle force and timed workout) and cognitive function (auditory oddball test) at two sessions. In each session two measurement runs were separated by an intermission, when a vitamin C tablet was given and announced either as a stimulant or as a control substance. During the cognitive task sessions EEG was recorded to assess event related potential P3 mean amplitude. The results showed significant placebo effect on total leg workout ( $p = 0.004$ ) but not on maximal hand–grip force ( $p = 0.39$ ). There was no effect on oddball test performance, but a significant session  $\times$  run interaction ( $F(1, 21) = 5.8$ ;  $p = 0.025$ ) revealed a decrease in P3 mean amplitude after the “stimulant” but not after the control drink. In summary, expectation of performance enhancement yielded increased physical effort in timed workout but no change in active force, revealing motivation–dependent increase in endurance, but no change in maximal muscle strength. Sustained mental performance with a concurrent reduction in cognitive resource allocation may suggest reliance of subjects on stimulant effect during cognitive task, where feedback was not immediately available.

#### PREDAVATELJI v 2012::

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#### SINAPSINI NEVROZNAJSTVENI SEMINARJI ...

so redna strokovna srečanja, na katerih svoje delo predstavljajo že uveljavljeni strokovnjaki, na kratko pa o aktualnih raziskavah spregovorijo tudi raziskovalci, ki so znanstveno pot začeli šele pred kratkim.

Seminarji ponujajo preglede zanimivih raziskovalnih področij, predstavljajo aktualne nevroznanstvene dosežke iz Slovenije in tujine ter odpirajo vpogled v tekoče raziskovalne projekte v Sloveniji.

Seminarji so namenjeni širši zainteresirani strokovni javnosti in spodbujanju novih sodelovanj. Za usmerjanje in spodbujanje razprave po predavanjih skrbi vabljeni strokovnjak – moderator.

Kadar nastopajo tuji predavatelji, potekajo seminarji v angleškem jeziku.  
Predlogi za nove seminarje so dobrodošli! Pošljite jih na: [seminarji@sinapsa.org](mailto:seminarji@sinapsa.org)