

Sometimes we see a glass half full and sometimes half empty. This happens because our interpretation of external world is usually biased. When we are perceiving the world, we like to think that we are objective. However, our **brains may trip us up and bias our perception of the world around us**. Sometimes these biases are positive, and make us perceive the world as a safe and cheerful place. However, another time such biases are negative, and make us see the world as a dangerous and gloomy place instead. While the positive biases are usually the reason of our elevated mood, the negative biases are commonly recognized in people suffering from depression, a common mental disorder that causes feelings of sadness or loss of interest in activities once enjoyed.

In the proposed project we suggest that a 30-minute session of aerobic physical exercise might promote occurrence of positive perception biases in and decrease occurrence of negative perception biases. Although general positive effects of physical exercise on our functioning are well-understood, little is known about how physical exercise could affect such biases. Therefore, in the project, we want to demonstrate that even a **one session of moderately intense aerobic exercise might make us see the world through rose colored glasses** by promoting positive biases, and reducing negative biases in our perception of the external world. We expect that positive influences of aerobic exercise on perception biases will be visible in case of both healthy and depressed adults.

To understand the exact mechanism in which aerobic physical exercise could affect perception biases, we aim at **investigating this relationship focusing on the organ that is responsible for generating the biases– the brain**. To realize this aim we will ask our participants (healthy and depressed adults) to take part in physical activity session (30 minutes of cycling on bike-ergometer) followed by a task allowing to assess biases in processing of emotional material. During the task, participants will be presented with both negative and positive pictures, and we will record electrophysiological activity of their brains to see what type of biases their brains are currently producing. Next, by employing **the cutting-edge methods of analyses** we will localize neural mechanism of the relationship between the aerobic exercise and the biases, trace their temporal dynamics and understand how different parts of the brain communicate with each other to create the biases after a session of physical exercise.

We believe, that the results of the proposed experiments will contribute to the **understanding of the brain mechanisms underlying more positive perception of stimuli after physical exercise in both healthy and depressed adults**. As a consequence, the project will inform the current **theories of exercise psychology and depression** and hence may facilitate psychological strategies and programs intended for those who suffer from depression, one of the major challenges of health systems worldwide.

Will a session of aerobic physical exercise work like rose colored glasses, counteracting negative biases in depressed adults, and promoting positive biases in healthy adults?