

Title of the project: Implementation of KETO for Brain Health.

1) Short description of the project (e.g, topic, background, aim; max 200-250 words):

In our research we are addressing **diet for ADHD, autism, depression and Alzheimer's prevention**. Within the scope of diet, we are focusing on keto. We define keto as 'being in ketosis', which means you have a certain amount of ketones (>0,5mM) in your blood.

How do you get these ketones in your blood?

This can be done in three ways: by following a ketogenic diet, by fasting and by using supplements (such as exogenous ketones or MCT oil).

This thesis project: The ketogenic diet (KD), a low-carbohydrate and high-fat diet, has seen a notable growth in interest, both within and outside of academia, in recent years. A wealth of research has safely introduced KD to various populations where various positive physiological and cognitive effects of the KD on populations suffering from illnesses (like obesity, epilepsy, and cognitive impairment) were found. However, there presently is an increasing number of healthy individuals opting for this diet, perceiving the KD as a healthy nutritional choice relative to other popular diets. On Social Media, one can read all kind of claims about better concentration, more focus, better mood etc. It is crucial to put the science behind the hype. Therefore, the main goal of this study is to investigate the effect of ketosis, induced by KD, on cognitive function, sleep quality, mood and ADHD symptoms.

2) Starting (and if relevant end) date of project:

Flexible

3) Tasks student will be provided with (e.g. recruitment, data collection, data entry, development stimulus material, programming etc):

Depending on your personal expertise and learning goals you will be involved in any of the following tasks: recruitment, data collection, data analysis, programming, planning and participant communication. In our research group, collaboration is key. No one person has to be good at everything. We work together to make as big an impact as possible!

4) Project with data collection and/or data already available?
(Please check box)

5) How many students can join this project?
Maximum 3

6) Data collection takes place

- on location (e.g. schools)
- in the lab (e.g. at FSW)
- online
- other, please specify

Depending on your personal interest and the exact timing of your thesis period, you will be working with pre-existing data, collect data online or at FSW.

7) Can you specify possibilities of (existing) data? (e.g, what type of data is/will be available, giving an indication of what type of research questions can be formulated)

Validated diagnostic questionnaires for mood, sleep, and ADHD.
EEG measurements with a NeuroCatch device.
Cognitive computer tasks (a task switching paradigm)

8) Is the project part of a large on-going study or a more individual study?
Both options are possible

Large on-going study Individual study

9) Relevant skills for students to have (e.g. affinity with a specific participant group, programming skills):

Most importantly: affinity with the topic of Nutrition and Brain Health.
Minimum: being able to perform basic statistical analysis in an independent way. It's considered a plus (but not a strict requirement) if you have strong statistical skills.

**10) Is the project suitable for Dutch and/or English speaking students?
(please check both if the project is suitable for both)**

Dutch

English

Please explain why:

To allow communication with participants, fluency in Dutch is needed. However, there are possibilities to team up Dutch- and English-speaking team members to overcome any language barrier.

11) Is the project already approved by the Ethics Committee?

Yes

No

Other, please specify:

12) Contact information project leader/supervisor (in case of absence, please indicate which period you are available):

Dr. Eline Dekeyster – e.a.g.dekeyster@fsw.leidenuniv.nl

You can apply for this position by sending a CV, Grade list, and motivation letter (including practicalities such as preferred time-lines) to me via e-mail. Partial applications will not be considered.

13) If you already have (a) information session(s) planned please indicate date, time and location.

14) Provisional literature (optional)

Danan A, Westman EC, Saslow LR, Ede G. The Ketogenic Diet for Refractory Mental Illness: A Retrospective Analysis of 31 Inpatients. *Front Psychiatry*. 2022 Jul 6;13:951376. doi: 10.3389/fpsy.2022.951376. PMID: 35873236; PMCID: PMC9299263.

https://www.youtube.com/watch?v=Dvh3JhsrQ0w&ab_channel=TEDxTalks

<https://www.metabolicmind.org/>

<https://www.steunleiden.nl/project/onderzoek-is-een-ketogeen-dieet-goed-voor-je-hersenen>