



Unraveling the Pathways Between Motor Unit Control, Metabolic State, and Dietary Interventions – **MetaMuscle**

Participant Information

Dear Participant,

Thank you for your interest in participating in the **MetaMuscle** study. Your role in this research is crucial and has the potential to significantly impact future studies in this field. Before completing the experiment, we encourage you to familiarize yourself with the project and the experimental setup so you can make an informed decision about whether you would like to participate.

Please read the following text carefully to supplement the information provided during your discussion with the study personnel. If you have any questions or concerns, please do not hesitate to contact us anytime.

Your participation in this study is entirely voluntary. *You may withdraw at any time without needing to provide a reason.* **Choosing not to participate or deciding to withdraw early will not result in any negative consequences.**

Please sign the consent form only if:

- You fully understand the nature and procedure of the study,
- You are willing to participate, and
- You are aware of your rights as a participant in this study.

I appreciate your interest in participating in our MetaMuscle Study and look forward to our testing day.

Important Information

Please note: To complete the experiment, you must come into the laboratory in a **fasted state**. This means you should not have eaten meals or snacks or consumed drinks containing calories (e.g., sweetened beverages, coffee with milk) **12 hours** before your testing appointment. **Water** and **unsweetened drinks** (e.g., unsweetened tea or coffee) are acceptable. Please **refrain from strenuous activities, exercise, or intense movement** for **12 hours** before the testing appointment, as it may affect your results.

As part of the experiment, you will consume **breakfast**. This breakfast meal includes the following **allergens**: **lactose** and **milk protein** (milk), **protein from egg yolks and whites** (eggs), **gluten** (wheat), and **soy**. Please inform the experimenters before the trial if you have any other allergies or sensitivities.

This breakfast contains a large amount of **simple carbohydrates**; please inform our experimenters if you have medical conditions that may put you at risk for **hyperglycemia**, such as **Diabetes Mellitus Type I or II**.

Assessment Types

During the MetaMuscle Trial, you will complete a total of five assessment types, which will be explained briefly below:

- **Blood glucose level measurements:** We will use blood samples obtained by finger-pricking with a safety lancet. Please be assured that the safety lancet is designed to minimize discomfort and potential risks. Depending on your metabolism, we will collect up to **10 samples** for our experiment.
- **Vital Signs:** We will monitor your Blood Pressure, Heart Rate, and Body Temperature before, during, and after the experiment.
- **EMG measurements:** To research the effects of the breakfast you consume as part of the trial, we will measure **Muscle and Nerve Behavior** using High-Density Surface Electromyography (**HDsEMG**) sensors placed on the skin of your upper arm, specifically the **Biceps** and **Triceps** muscles.
- **Force Measurements:** To measure your force, you will perform three sets of two **60-second-long contractions** using your arm muscles by pressing your hand against a force sensor. We will repeat this measurement **three times** throughout the trial.
- **Neurological and Cognitive Assessments:** We will conduct neurological and cognitive tests to determine your individual parameters using multiple standardized assessments. We will ask you questions regarding your ability to perform specific tasks and your preferences when executing certain tasks. Additionally, we will score your cognition and memory function with a standardized test.

These measurements can be explained in more detail at any time, so please don't hesitate to ask any questions you may have.

Experimental Sequence

On your experiment day, you will arrive **fasted**, meaning you will not have eaten for the past **12 hours** beforehand. We will begin by discussing any questions or concerns, briefly reviewing relevant medical history and information, and collecting your participant **consent form**.

After this initial screening and information, we will start with our **first round of measurements**, where we assess your

- Blood glucose levels
- Vital signs
- Maximum voluntary contraction
- EMG signals and Force levels.

Next, you will ingest your **breakfast intervention**, which consists of waffles with maple syrup and banana alongside a rice drink. After eating this meal, we will periodically measure your **blood sugar levels** in 30-minute intervals.

Once you have reached your **blood glucose level peak** (30-60 minutes after meal ingestion), we will repeat the measurements of your

- Vital signs
- EMG signals and force levels.

Afterward, we will wait for your blood glucose levels to decrease, which usually takes about 120-240 minutes, depending on your metabolism. We will continue to test **blood glucose levels** throughout this waiting period. Additionally, we will complete **cognitive and neurological assessments** with you during this timeframe.

After your blood glucose levels have **stabilized**, we will repeat the measurements of your

- Vital signs
- EMG signals and force levels.

This concludes our experiment.

Data Protection and Participant Rights

Data safety and security are of the utmost importance to us. We create, store, process, and work with your data according to **GDPR** and the highest data protection standards. You have the right to request more information about your data or to have it deleted at any time. Please get in touch with **Dr. Chaeyawan Auepanwiriyaikul** with any inquiries regarding data processing and management.

If you feel unwell or wish to discontinue the trial at any point, please inform the experimenter immediately. As outlined in the **Declaration of Helsinki**, you can revoke your consent to participate at any time during the experiment.

Contact and Further Information

Please do not hesitate to contact us with any questions or concerns or require further information about the study.

Study Coordinator:

Laura B. Müller

Email: laura.b.mueller@uni-bayreuth.de

Phone: +49 9921 407-1163

Principal Investigator:

Prof. Dr. A. Aldo Faisal

Email: aldo.faisal@uni-bayreuth.de

Phone: +49 9921 407-1165

Institution:

Chair for Digital Health

University of Bayreuth, Faculty VII / Campus Kulmbach

Address: Fritz-Hornschuch-Str. 13, 95326 Kulmbach, Germany

Website: <https://www.digital-health.uni-bayreuth.de/en/index.html>

Email: faisal_lab@uni-bayreuth.de

For any questions regarding data protection and your rights as a participant, you can also contact our Data Manager or the Institutional Data Protection Officer:

Data Manager:

Dr. Chaiyawan Auepanwiriyaikul

Email: Chaiyawan.Auepanwiriyaikul@uni-bayreuth.de

Data Protection Officer:

Axel Pürckhauer

Email: datenschutz@uni-bayreuth.de

Phone: +49 921 55-7668

Additionally, if you experience any issues or wish to withdraw from the study at any time, please notify the experimenter or contact us using the provided details. Your well-being and rights are our top priority.

Consent to participate in this study

I hereby certify that I have read and understood the information within this information sheet and have been thoroughly informed about my rights as a participant. I was able to ask any questions and raise any concerns regarding this trial. I also certify that I am at least 18 years of age and am legally able to consent to participation in this study. I understand that I can withdraw my participation at any time without stating any reason.

Please state your name and today's date to sign this participation agreement:

Date

Name (printed) and Signature