

Dear LTE Participant,

Thank you for participating in our Lipids to Energy (LTE) study through eXtraordinary Kids Program. We are excited to let you know that we have completed all the study visits for LTE!

- The goals of this study were to understand if energy use differs for young men with Klinefelter syndrome (47,XXY) compared to men without XXY, and to see if taking fenofibrate for one month would be helpful to guys with XXY.
- 27 young men with XXY and 24 young men without XXY participated in the study.
- There are still a few individuals who are in line to receive the sleep watch and activity monitor, so if you have not worn these yet **we will be in contact as soon**.
- We are now able to start looking at the data from this study and wanted to share some early results for those of you who are interested:



We observed great effort and hard work despite lower VO₂ max (exercise capacity) for young men with XXY.

This means that exercise is harder for many guys with XXY. In addition, many guys with XXY reached their anaerobic threshold at much lower workloads. This can be a reason for feeling fatigued.

Now we need to figure out why and what we can do about it!



Even though the XXY and control groups have similar height, weight, BMI, and testosterone levels, **body fat percentage is higher in XXY**, with **higher fat mass** and **lower lean mass** compared to controls.

Additionally, young men with XXY had **lower bone mineral density**.

We have known these things about older men with XXY with chronic hypogonadism, but this confirms these differences are present early on and without obesity.



Young men with XXY have similar resting energy expenditure (i.e. they burn a similar number of calories at rest). However, **they are less efficient at using fat as an energy source.**



Mitochondria in the muscle do not work as well in young men with XXY, especially when converting fats into energy.

We are now staining the muscle biopsy samples to learn more about the fiber type, number, and size, as well as the different enzymes involved in mitochondrial respiration.



Activity monitoring tells us that young men with XXY get less physical activity than their peers.

Sleep monitoring suggests similar sleep duration but is shifted later for XXY, and less white light exposure during the day.

Physical activity or sleep may be targets for improving exercise capacity and fat metabolism in XXY.

We will be formally analyzing the data in the upcoming months and will share with you publications as they become available. Thank you for being a part of this study and making a difference!

Sincerely,
Dr. Davis and the LTE Study Team