

Center for Human Health & Performance (CH²P)



umass.edu/ials/core-facilities/center-human-health-and-performance

Located on the 3rd floor in the Life Science Laboratories the Center for Human Health & Performance (CH²P) is comprised of four core facilities: Exercise Intervention & Outcomes, Human Motion, Living Science, and Room Calorimeter. Equipment in the CH²P allows researchers to comprehensively evaluate health, fitness, and behavior. Research populations can be extensively characterized with our broad range of equipment and facilities, and health interventions can be rigorously investigated.

We offer training to users to conduct experimentation for use on a fee for service basis to both internal and external researchers, academic or industry based. Following an initial consultation, covering experimental parameters training and access is arranged through the director.

ACCESS

To request access, training, or additional information, please email ch2p@umass.edu.

Our rates are competitive and based on usage. Visit our website at umass.edu/ials/ch2p for current listing.

TRAINING

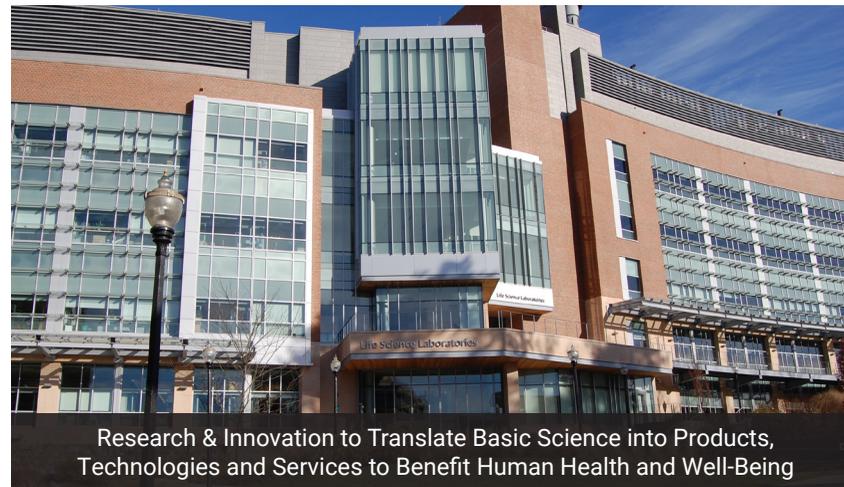
Training for new users consists of:

- lab safety training,
- operation of the instrument and associated software,
- use of data analysis software,
- exporting or presenting data,
- clean up and shutdown of the instrumentation.

Once the training is complete, researchers may schedule their experiments online through CORUM (corum.umass.edu).

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Research & Innovation to Translate Basic Science into Products, Technologies and Services to Benefit Human Health and Well-Being

PARTNER WITH US!

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Center for Human Health & Performance

Institute for Applied Life Sciences
University of Massachusetts Amherst



Investigation of
Physiological,
Biomedical and
Behavioral Studies

Revision (05/12/25)

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CAPABILITIES

Exercise Intervention and Outcomes

Perform clinical participant intake and evaluation, bone densitometry & body composition, exercise testing, and exercise training



Houses a wide variety of equipment that provides researchers with facilities in which they can:

- Evaluate clinical markers of health: height, weight, cardio-metabolic function, strength, and blood/biopsy generated measures.
- Complete participant characterization: strength, metabolic capacity, cardiac function, body composition (bone, fat, muscle) – including separation of visceral and subcutaneous abdominal fat
- Conduct exercise intervention studies in a controlled setting. Participants can be closely monitored to ensure compliance to ensure precision in dose/response measures.
- Evaluate a wide range of health-related biomarkers in the core or utilize other IALS Cores for additional characterization.

Human Motion

Designed and equipped for assessment of human movement (with and without robotic assistance) and the evaluation of wearable technologies that aim to quantify human motion.

The Human Motion Lab is a large open space (38' x 20') with a 10' ceiling and is located within the Center for Human Health and Performance allows us to conduct a wide variety of studies evaluating the effects and interactions of human motion with behavior, sleep, aerobic fitness, strength, body composition and muscle function.



Living Science

A unique home-like setting where researchers are able to investigate human behavior for prolonged periods.



Measurements gathered from the instrumentation allow researchers to gain the information necessary for the calibration and/or validation of wearable activity monitors. Data generated can serve many research study designs, ranging from the development of the next generation of wearable and embedded monitoring devices to basic studies looking to objectively evaluate how individuals spend time in a natural setting. The Living Science core provides:

- Viso video capture and Observer XT video coding software by Noldus, allowing researchers the ability assess both the quality and duration

of activity where participants can act “naturally” in this home-like setting.

- Equipped with an Oxycon Mobile metabolic system that can be used to assess energy expenditure and macro-nutrient utilization, for short durations (i.e. 1-2 hours).
- Houses several research grade wearable activity monitors, which allow newly designed devices to be compared to industry standards.

Room Calorimeter

One of only 26 such facilities worldwide, the Room Calorimeter houses two whole room metabolic chambers.



Small room calorimeter

The two chambers in Room Calorimeter differ in their capabilities. The smaller (92" x 48") 'flex' chamber can be configured in either a low or high flow setting for the assessment of both resting or exercising metabolism.

The large calorimeter (160" x 131") is configured for long duration stays during which individuals can receive meals or medications through pass through ports. This chamber houses a toilet, sink, bed, desk, TV (w/ Apple TV), Lode Valiant 2 Treadmill, and a two camera observational video system which allows researchers to encode the video with behavior data to gain in-depth understanding of the interactions between behavior and metabolic cost.

The Room Calorimeter core also has access to the kitchen, in the Human Testing Center, allowing researchers to prepare “metabolic meals.” The ability to tailor diet during time in the chamber allows researchers to investigate the effects of macro nutrient make-up or energy balance on whole-body energy metabolism.