Engineering design for mobile brain imaging helmet – AM-PET

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INTRODUCING, THE AM-PET HELMET.

Finally, a safe way to image the whole brain, in motion.

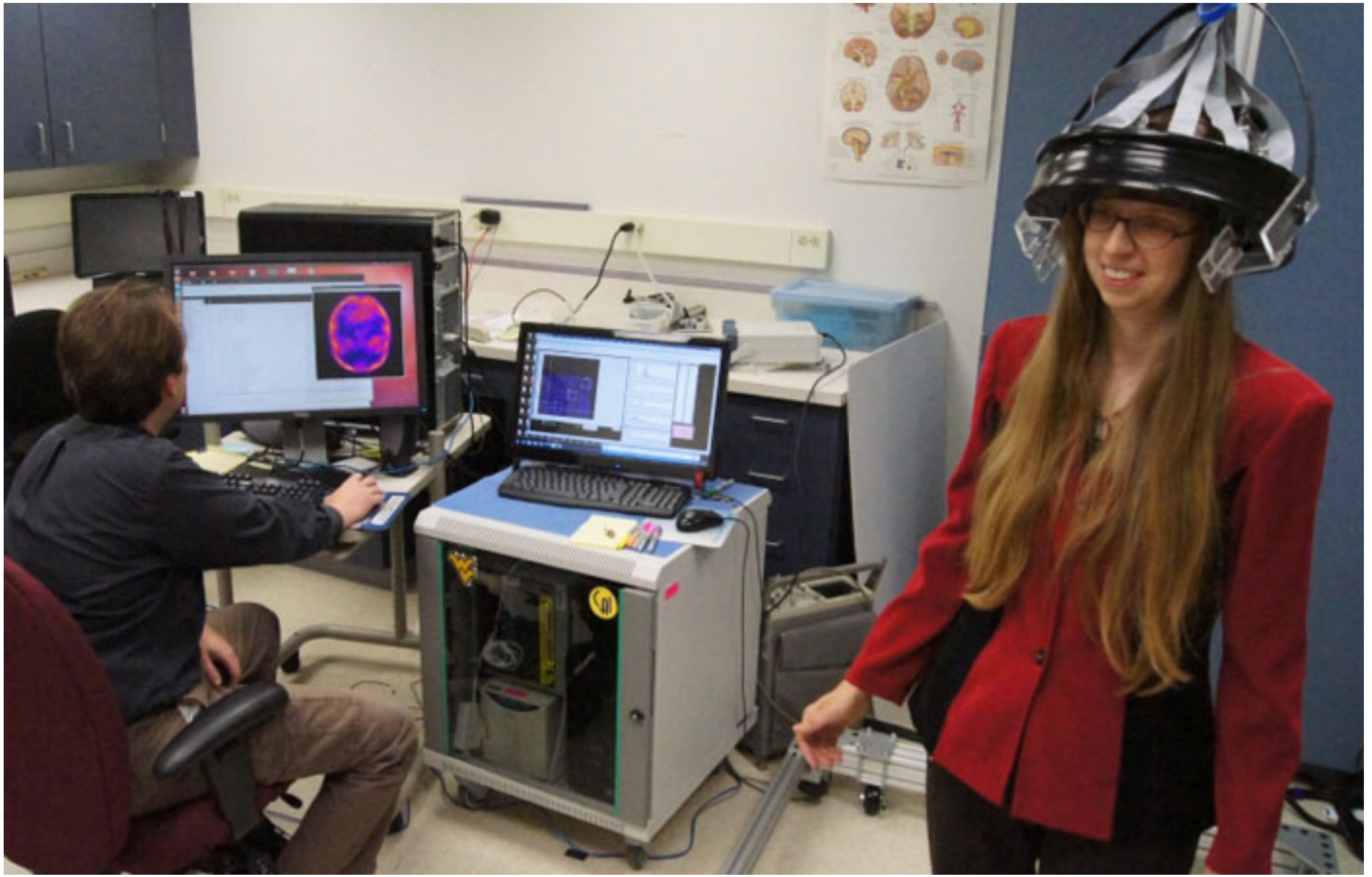
Ambulatory

Micro-dose

Positron

Emission

Tomography **helmet.**



Julie Brefczynski-Lewis, a research assistant professor at the WVU Center for Neuroscience, demonstrates the portable PET brain scanner prototype in action

The three proposed working designs for the ambulatory micro-dose brain PET imager (AMPET).

SEATED AMPET – Original AMPET Helmet developed by Neuroscientists, currently being used on patients in seated positions preforming various activities such as tapping one's foot or clapping one's hands.

EXOSTRUCTURE SUPPORT –WVU'S Engineering school is currently working on a prototype for the support of the helmet as well as incorporating a football helmet for the photo-detector module ring. This will allow for a patient to walk on a treadmill comfortably.

BACKPACK SUPPORT – WVU's Electrical Engineering students are working on a future design to use a robotic arm as a support for the helmet.

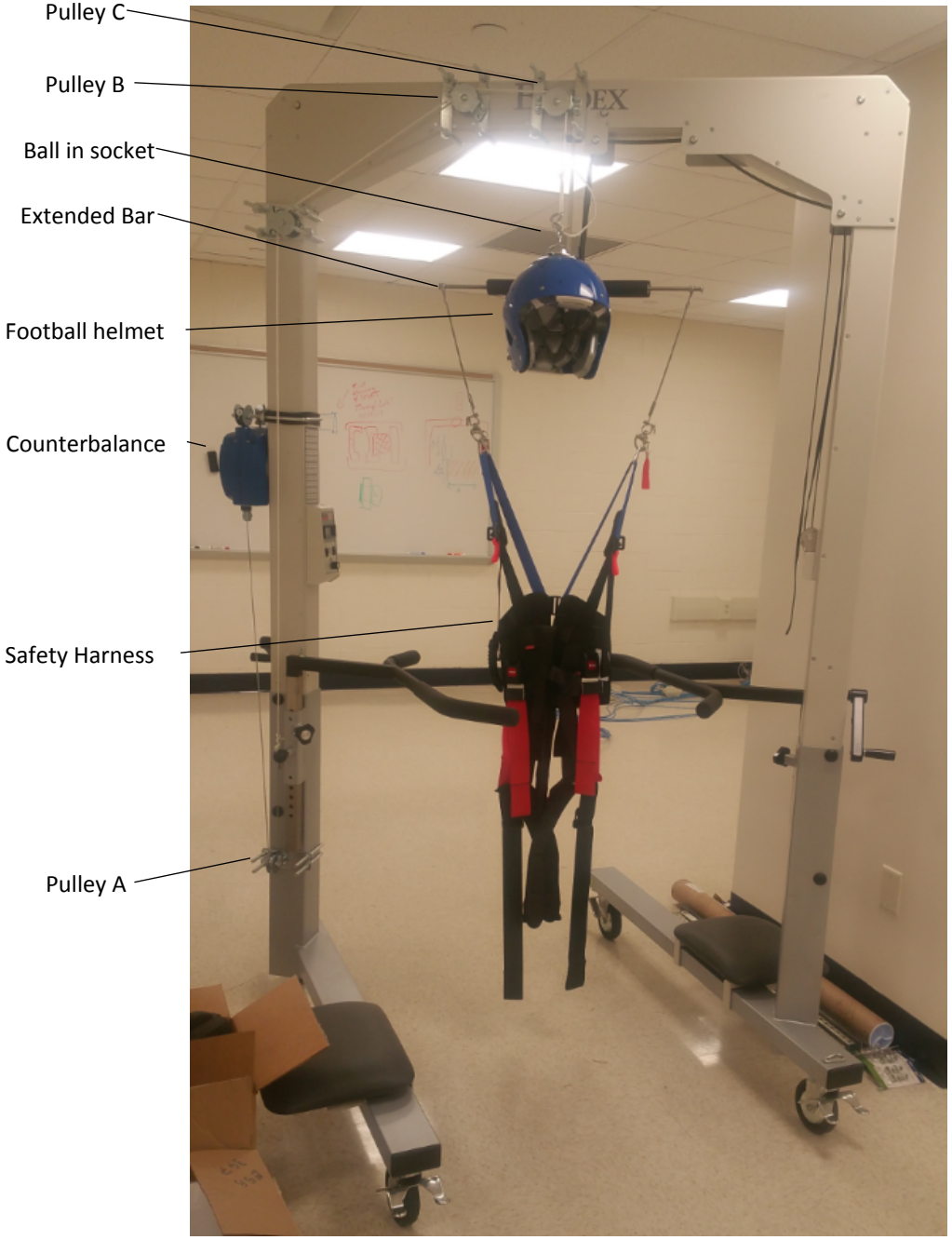
Wearing the [future] portable scanner

Biodex Unweighing system

- Used as the structural support of the 8 pound AMPET helmet
- Used for safety of the patient and the 12-16 photo-detector modules
- Used for a patient to walk on a treadmill or around a room

Modifications of Biodex System

- Extend the existing bar so the AMPET Helmet can fit between the supports
- Add a counterbalance to act as an adjustable counterweight
- Use a system of pulleys to redirect the counterbalance’s wire rope



Modified Biodex System

Counterbalance
The counterbalance is used as an internal counterweight system. This holds constant tension as the helmet moves up and down.

Pully system
The pulley system allows the counterbalance to be used in the way it is intended by hanging vertically. The pulleys direct the rope over the center of the Biodex system and helmet.

Helmet
The helmet has a ball in socket at the top to allow for movements of the head. This is where the rope from the counterbalance attaches. (note the photodetector modules are not attached to the helmet in this image)

Thank You to our Supporters

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For more information about the AMPET Helmet please visit our website

www.pethelmet.org