

MUMH - INNOVATION IN MOTION

C R G A DESIGN

INITIAL STATE:

This mid-rise 6 story masonry building dates from 1921 just before the nearby Baltimore Memorial Stadium was built on 900 East 33rd Street. The 6th floor suite was originally designed as two side by side operating rooms fitted out with canted plaster ceilings and green ceramic wall tiles all over a compacted sand floor and shallow topping slab. Now a professional building housing, it also includes research and training spaces.



TARGET STATE:

We applied Ambulatory Furniture and Finish Standards supporting Medstar branding. The blue resilient accent floor and wall finishes draw your eyes to the feature wall visible from the entrance. Integral base that aids in the cleanability and acoustically enhanced gypsum walls help dampen intrusive noises. High color rendering index light fixtures help optimize digital capture for motion analysis and custom millwork designed for dust reduction and convenient charging of wearable devices and virtual reality equipment.

GAP ANALYSIS:

Staff are now able to study and monitor patient progress while doing rehabilitation or after a surgical procedure. The suite is divided into two main research spaces separated by a work zone. Real life walking and running scenarios are studied using Grail adaptive equipment. Athletes have their strength assessed and the power of different muscle groups measured on the Humac Norm iso-kinetic machine. Patients can walk tethered to the Solo track while kitted out with wearables for gait capture and have their walking force captured by the embedded force plates at the walking track.



INSIGHTS AND CHALLENGES

Equipment vendors shared their expertise for their ideal state. This MRIC suite was then evaluated to meet these acceptable criteria including noise, vibration, and electromagnetic emissivity. Some compromises were made because mitigation would have been too costly, such as structural mitigation for the vibration of the building. The proximity of the suite to elevator shafts and attic mechanical equipment necessitated an electromagnetic interference study and a portion of the data will need to be filtered out.

IMPROVEMENT CYCLE (How Do We Sustain It?)

It is important to pursue and apply research in new and innovative ways. It is also important to give timely feedback to clinicians. This facility does both. The Musculoskeletal Research and Innovation Center (MRIC) has built in flexibility for researchers to add future powered force plates, change wearables, and adjust analysis methods. There are adjustable railings on the walking track side to allow camera placement changes and the powered tables allow for extra connectivity.

THE WHY (Our Reason for Action):

This Musculoskeletal Research and Innovation Center (MRIC) will transform the way mobility impairments are assessed and treated. By integrating advanced technology, MUMH will be able to provide in-depth analysis of how patients move, while measuring their incremental progress during rehabilitation and after surgery.

SOLUTION APPROACH:

This Musculoskeletal Research and Innovation Center (MRIC) is phase 2 of the larger vision for the entire 6th floor of the 33rd Street MUMH Professional Building focusing on gait, motion, clinical orthopedic analysis, and surgical training for interventions to mitigate and repair the spine and limbs to restore best movement and range of motion. This floor will also include a large conference center to share the greater team's research and analysis benefiting the wider community and showing MUMH research and thought leadership.