equipment inventory

Assessment and training Capabilities

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| **ASSESSMENT or TRAINING TYPE** | **EQUIPMENT** | **DETAILS** | **LOCATION** |
| **Muscle/Adipose Biology** | 5mm Bergstrom Needles | The gold standard in the field for collecting muscle tissue from human participants. | CCTS procedural room |
| Conchotome Nasal Forceps | Additional tool used to collect superficial adipose tissue. |
| **Body Composition and**  **Imaging Techniques** | Total body &  regional bone densitometers | LUNAR DPX-IQ, DXA Lunar Prodigy  IDXA  Bone density, lean body mass & fat mass; custom analyses. | Pediatric Exercise Physiology Lab  CCTS Functional Assessment and Body Composition Core |
| MRI | 3T PRISMA Scanner  ClinScan Scanner | Magnetic Resonance Imaging and Spectroscopy Center (MRISC) |
| CT | 64 Slice Dual Source  Siemens Somatom Definition | Gill Heart Imaging Center |
| **Muscle Performance** | Biodex  Dynamometer | Measures isokinetic, isotonic, & isometric strength & endurance of limb & trunk muscles; also measures peak power generated during specific functional tasks. Baseline testing, return-to-sport, &  functional testing. | Human Performance Lab  Multidisciplinary Science Building (MDS) B04  Musculoskeletal Teaching Lab |
| Handheld  dynamometers | 2 J-TECH  1 LAFAYETTE  5 Jamar+ Digital/Jamar Hydraulic handgrip  Isometric strength of upper & lower limbs. | Human Performance Lab  Multidisciplinary Science Building (MDS) B04  CCTS Functional Assessment and Body Composition Core |
| **Strength Testing & Training** | Keiser Air 250 Leg extension | Air-powered resistance equipment; measures maximal strength & power output & number of repetitions. *See Muscle Performance for additional strength testing equipment*. | Human Performance Lab  Multidisciplinary Science Building (MDS) B09 |
| Keiser Air 300 Leg press |
| Keiser Air 350 Squat |
| Keiser Air 250 Leg curl |
| Keiser Air 300 Seated calf |
| Keiser Air 250 Lat pull down |
| Keiser Infinity functional trainer |
| Keiser Air 350 Biaxial upper back |
| Keiser Air 350 Biaxial chest press |
| 2.5-50 LB Dumbbell Set |
| **Cardiovascular Testing & Training** | VMAX Encore Metabolic Cart (Vyaire Medical) | Provides cardiovascular stress testing for aerobic capacity; VO2max and VO2peak. | CCTS Functional Assessment and Body Composition Core |
| 12 Lead ECG | The metabolic cart provides integrated 12 lead ecg for monitoring heart rates and rhythms. |
| Lode cycle | Metabolic cart interfaced upright bike. |
| Trackmaster TMX428  Treadmill | Metabolic cart interfaced treadmill can be system controlled or manually controlled. |
| BERTEC Dual-belt treadmill | Provides independent motion and control of each belt along with accurate load measurements. | Human Performance Lab  Multidisciplinary Science Building (MDS) B04 |
| ALTER-G  Anti-gravity treadmill | Enables running/walking in reduced gravity conditions; operates from 20%-100%g conditions. Lower extremity motion may be captured via clear viewing windows. | Biodynamics Lab  Multidisciplinary Science Building (MDS) 161 |
| Monark 828E  Stationary bikes | 2 stationary ergometers that can be easily calibrated. | Human Performance Lab  Multidisciplinary Science Building (MDS) B04 |
| SciFit Rex7000 Recumbent  Elliptical | Smooth elliptical movement for efficient total body exercise and warm-ups replicates natural knee movements to improve functional gait. | Human Performance Lab  Multidisciplinary Science Building (MDS) B04 |
|  | Large Commercial and Home Treadmills | 1 PaceMaster Treadmill  L7 & L8 Landice Treadmills  1 Precor Treadmill  1 LifeFitness Treadmill  2 Freemotion FlexDeck Treadmills  Used for participant warm-up or  running/walking exercise interventions;  includes railing for those with balance  deficits. | Musculoskeletal Teaching Lab  Human Performance Lab  Multidisciplinary Science Building (MDS) B04 |
|  | Polar HR  monitors | Used for participant target HRs during acute bouts and progressive training  protocols. | Human Performance Lab  Multidisciplinary Science Building (MDS) B04 |
| **Biodynamics & Kinematics** | RAPTOR-4s high speed, high  resolution  cameras | Provides 3D video analysis of motion using reflective markers placed strategically on subject. Raptor camera may be used indoors or outdoors. Internet hubs connect cameras to data collections computers. Can easily move/configure cameras into different areas (i.e. around force plates). | Human Performance Lab  Multidisciplinary Science Building (MDS) B04  Biodynamics Lab  Multidisciplinary Science Building (MDS) 161 |
| CORTEX &  MOTION  ANALYSIS CORP. Analysis software | Enables setup, calibration, tracking, & post-processing of data. Analyzes target displacements, velocities, &  accelerations. Also enables synchronous collection of data from force plates, EMG, accelerometers. Can create output files for more advanced analysis packages (i.e. Visual 3-D, Matlab, Labview). |
| Photo cells | Detect time of movement. |
| **Ligament Testing** | Ankle  arthrometer | Measures ankle ligament laxity in multiple planes. | Musculoskeletal Teaching Lab |
| **Kinetics** | 3 BERTEC  5 KISTLER  Dynamic force plates | Measures ground reaction forces when standing or moving on the plates. Portable & in-ground. Can assess high impact forces. | Human Performance Lab  Multidisciplinary Science Building (MDS) B04 |
| AMTI  Static force plates | Portable force plates measuring static balance. | Biodynamics Lab  Multidisciplinary Science Building (MDS) 161 |
| NEUROCOM  Long force plate | Assessment of impact forces during functional movements (squatting, stepping up, etc.) |
| Instrumented bicycle pedals | Attach to electronic bicycle ergometer to provide simulations of various race conditions. Compatible with Motion Capture visual 3-D movement system. |
| **Gait** | BERTEC Dual-belt treadmill | See Cardiovascular Testing and Training. | Biodynamics Lab  Multidisciplinary Science Building (MDS) 161 |
| ALTER-G  Anti-gravity treadmill | See Cardiovascular Testing and Training. |
| GAITRite | Portable pressure sensitive walkway that can provide easy identification of gait  disturbances or gait changes with rehab, concussion, or disease. |
| **Balance/Postural Stability** | NEUROCOM  SmartBalance Master | *See Concussion Assessment.* | Biodynamics Lab  Multidisciplinary Science Building (MDS) 161 |
| Long force plate | *See Kinetics.* | Musculoskeletal Teaching Lab |
| **Balance/Postural Stability**  **Metabolism**  **Pulmonary Function** | Dynamic force plates | *See Kinetics.* | Biodynamics Lab  Multidisciplinary Science Building (MDS) 161  CCTS Functional Assessment and Body Composition Core  CCTS Functional Assessment and Body Composition Core |
| Static force plates | *See Kinetics.* |
| VMAX Encore Metabolic Cart (Vyaire Medical) | Basal and resting energy expenditures (Metabolic Rates) and substrate  metabolism. |
| VMAX Encore Metabolic Cart (Vyaire Medical) | Full PFT capabilities such as lung volume, diffusing capacity, and spirometry. |
| **Physical Activity** | Actigraph wGT3x-BT | 3-axis accelerometer records high resolution continuous physical activity and sleep/wake information. | College of Health Sciences  Rehab Sciences and Clinical Nutrition Departments  CCTS Functional Assessment and Body Composition Core |
| **Pulmonary Function** | Fitbit Flex | Provides objective step count and average daily step information as well as quality of sleep. | CCTS Functional Assessment and Body Composition Core |
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