



The Wasserman Gait Analysis Laboratory plays an integral part in achieving the goals of the Rubin Institute for Advanced Orthopedics, located at Sinai Hospital of Baltimore. The Institute includes two centers of excellence: the Center for Joint Preservation and Replacement and the International Center for Limb Lengthening. The Wasserman Gait Analysis Laboratory has a three-fold mission of excellence in patient care, research, and education. We use state-of-the-art technology to perform biomechanical assessment of walking disorders. This enables us to provide important information for improved clinical treatment, planning, and outcome assessment. We also teach doctors in training and perform research to improve clinical orthopedics.

Staff

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Obtaining Insurance Authorization

Assessment of gait by this sophisticated technique is relatively new, and not all insurance companies pay for this test. Our gait lab staff will assist you in finding out if this test is covered by your insurance plan.

Scheduling an Appointment

To schedule an appointment or for additional information, please call (410) 601-9830 or call the Gait Laboratory directly at (410) 601-5283. The gait analysis will take between two and four hours to complete. We will need a signed prescription from your physician in order to perform the analysis. For your comfort, please bring tight-fitting athletic shorts or a bathing suit to the appointment.



Wasserman Gait Analysis Laboratory



SINAI HOSPITAL

a LifeBridge Health center

Rubin Institute for
Advanced Orthopedics

What Is Gait Analysis?

Static measurements from clinical examination and x-rays are inadequate to assess the subtle dynamic aspects of walking. Clinical observation can be misleading. In order to prescribe effective clinical treatment, more comprehensive information is needed. Gait analysis provides this information by monitoring the skeletal alignment, muscle function, and forces acting on the body during walking. Gait analysis allows accurate assessment of walking function using a series of tests, a variety of sensors, and specialized computer equipment.

What Tests and Exams Are Administered During Gait Analysis?

Physical Exam

We begin with a detailed physical exam of the musculoskeletal system, which includes joint range of motion, manual muscle strength, muscle tone, and muscle control. Other tests may be included in the exam as needed.



Three-Dimensional Movement Assessment

We use a Motion Analysis Corporation, Inc. Real Time System with eight infrared cameras to measure the position of round markers taped to specific points on the patient's body.



By tracking the marker positions, we can calculate how the patient's joints bend and the body moves as the patient walks. We use force plates embedded in the floor to measure how the patient's foot supports the body weight. Custom software then calculates the torque and power generated by the patient's joints during walking.

Electromyography

Sensors taped to the patient's skin monitor the muscle activity of the legs as the patient walks. This test tells us when the muscle is being used during the walking cycle. This can be compared with normal muscle timing and body orientation to determine if the muscles are used appropriately.



Foot Pressure Assessment

We use thin sensors placed in the shoes to measure the dynamic loading of the foot. This helps us to understand certain foot problems and prescribe orthotics.



Temporal Spatial Parameters

We use a GAITRite mat to measure the temporal and spatial parameters of walking. Examples of these parameters include walking speed, cadence, step length, step width, and foot progression.



Metabolic Energy Assessment

Gait abnormalities make it harder to walk and cause a patient to use more energy. We measure the energy expended during walking using COSMED K4B² metabolic



Video Assessment

We videotape walking to capture a permanent visual record of the patient's walking function. We can then compare the walking before and after surgery.

Computer Modeling

Additional information about walking can be obtained through computer modeling, including dynamic muscle lengths and contractile velocities.



What Is the Role of Gait Analysis in Treatment?

These are some of the diagnoses in which clinical gait analysis may be useful to help plan a treatment strategy:

Orthopedic Conditions

- Lower-limb deformities
- Limb-length difference
- Arthritis
- Poliomyelitis
- Leg amputation

Neuromuscular Conditions

- Cerebral palsy
- Muscular dystrophy
- Peripheral nerve injury
- Spina bifida
- Stroke
- Parkinson disease
- Traumatic brain injury