

## Medical Director

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WFUBMC/Brenner's Children's Hospital

## Pediatric Physical Therapist

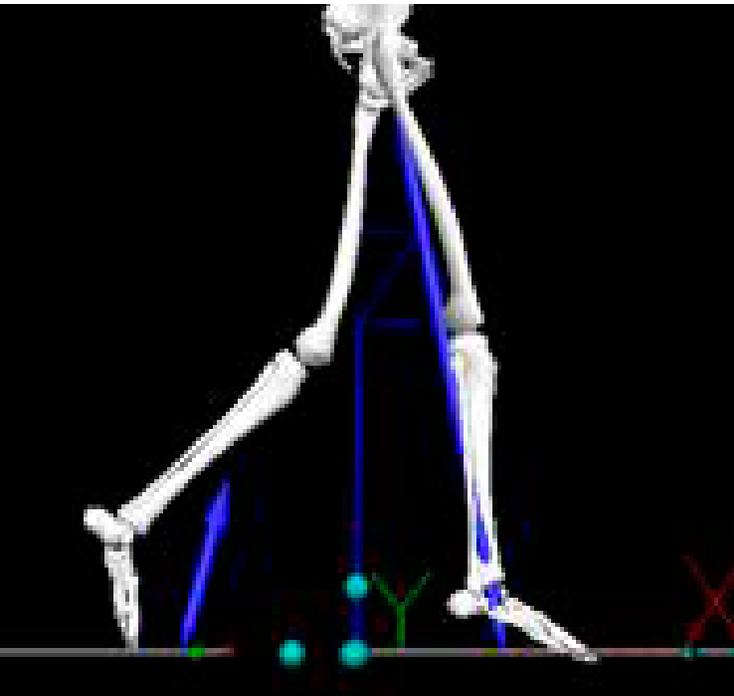
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Clinical Assistant Professor  
Winston-Salem State University

## Laboratory Manager

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Department of Physical Therapy  
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[www.biodynamicslab.org](http://www.biodynamicslab.org)

## Human Performance and Biodynamics Laboratory

A collaboration between Wake Forest School of Medicine  
and Winston Salem State University School of Health Sciences

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## Clinical Motion Analysis

Human Performance  
& Biodynamics  
Laboratory



A Mission to Care. A Mission to Cure.

## Clinical Motion Analysis

In the Human Performance and Biodynamics Lab, motion analysis is performed to measure movement patterns in people who have complex conditions involving muscles, joints, nerves or even bones.

This work is sponsored by the Department of Orthopaedic Surgery at Wake Forest School of Medicine and the Department of Physical Therapy at WSSU. The tests use computer software to show how your bones and muscles work when you move.

**A typical visit will take approximately 1½ to 2½ hours of your time. When you come in to participate in the analysis, the following things will happen:**

- **Clinical examination** – A physical therapist will examine the patient and test muscle strength and range of motion of the hips, knees, and ankles.
- **GateRite analysis** – Patients will be asked to walk across a carpet walkway while being videotaped with a camcorder.
- **3D motion analysis** – Reflective markers will be placed on the patients' skin so that high speed cameras can follow the movement of the patient.
- **EMG recordings** – Sensors will be placed on leg muscles to record the electrical activity of the muscles while walking.

## Our Team Approach

In the Human Performance and Biodynamics Lab, orthopaedic surgeons, physical therapists, biomedical engineers and medical students are all involved in the lab. We work together as a team to solve challenging problems. To help families become informed and involved, our team thoroughly explains the process of motion analysis and its effect on treatment outcomes.

## Motion Analysis

Quantitative motion analysis is useful in identifying the underlying causes for movement abnormalities in patients with cerebral palsy and other conditions. The results of the motion capture system have been shown to be useful in determining the best course of treatment.

## What to Bring

**Bathing suit or tank-top/bike shorts** –

Wearing tight clothing allows us to record your movements without baggy clothing getting in the way of your hips, knees and ankles.

**Assistive devices** –

If you walk with the help of an assistive device please bring this so that we can film you walking with and without the device. Examples of assistive devices include braces, crutches, walkers, etc.

