

ORTHOPAEDIC RESEARCH LABORATORIES

MISSION

Orthopaedic Research Laboratories (ORL) is dedicated to enhancing patient outcomes through bench-top performance testing to optimize the safety and design of orthopaedic implant systems.

EXPERIENCE COUNTS

- Over 40 years experience providing testing data and reports to the orthopaedic device industry, the U.S. Food and Drug Administration (USFDA) and other regulatory bodies worldwide.
- Over 250 peer-reviewed publications.
- Over 160 scientific exhibit presentations at the Annual Meeting of the American Academy of Orthopaedic Surgeons. (www.ORL-inc.com)
- Deadline driven protocol development, testing and delivery of comprehensive test reports suitable for regulatory submission.
- Expertise in custom test design and fixturing.
- Unique expertise in development of sophisticated computational models rendering realistic metal and polymer component stresses, soft tissue interactions and kinematic performance characteristics.

FULL SPECTRUM TESTING

ORL is globally recognized as a leading provider of standardized (ASTM/ISO) and custom orthopaedic device evaluation.

Extensive testing capabilities to support fatigue and other physical testing, finite element analysis, computational kinematic assessment and design optimization.

Expertise and testing experience in...

- Hip, knee and shoulder arthroplasty systems
- Modular connection fatigue and surface damage
- Small joint arthroplasty systems including ankle, elbow and wrist
- Fracture fixation plates and rods
- Bone screws
- Bone cement and mixing systems
- Subsidence testing
- Elastomeric and articulating spinal disc replacement systems
- Spinal fusion systems
- Material performance characteristics
- Surgical technique optimization

ABOUT ORL

ORL testing services are supported by four decades of solving complex problems related to the musculoskeletal system.

We work with orthopaedic implant manufacturers worldwide from start-up companies to the major industry players.

ORL is a recognized innovator of testing standards and methods with a proven track record of providing testing for regulatory approvals, design optimization and product marketing.

ORL actively supports orthopaedic education and provides research opportunities to orthopaedic surgeons, fellows and students.

ORL TEAM

- A. Seth Greenwald, D.Phil.(Oxon)
- Christine S. Heim, B.Sc.
- Paul D. Postak, B.Sc.
- Edward A. Morra, M.S.M.E.
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Orthopaedic Research Laboratories

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Orthopaedic Research Laboratories

Proprietary multi-directional wear simulators (22 stations) utilized for wear and durability testing of ankle, spinal disc (elastomeric and articulating) and other small joint arthroplasty systems.

Unique 25+ year archive of device test reports and publications including proprietary database of contemporary predicate data available for use in regulatory submissions.

On-site machine shop supports custom fixture construction.

Five MTS Bionix® load frames (one axial-torsion).

Computational testing lab with state-of-the-art kinematic and finite element analysis capabilities.

Instron® axial-torsion test machine.

Orthopaedic Research Laboratories occupies a 6,000 square foot, custom built facility in the historic Bloch Building in Cleveland, Ohio.

In-house CAD capability supports physical and computational testing.

Comprehensive orthopaedic and engineering library with several thousand titles and over 30 journal subscriptions.

Physical property determination equipment, microscopic and photographic capabilities to support retrieval analysis.

