

Research Interests & Projects

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Device Biomechanics Evaluation

When new medical devices are under development, it is important to determine the static and dynamic (fatigue) response of the devices under simulated use conditions or at the extremes of possible device usage. Our laboratories have the capability of testing devices in air, in saline, in temperature-controlled saline, or at elevated temperatures either in single-cycle to failure or in fatigue over thousands or millions of cycles. Among the projects performed are:

- Dynamic testing of a knee prosthesis to verify a redesigned attachment mechanism between the tray and polyethylene insert, including vertical load, rotation, and side loading simultaneously.
- Dynamic testing of a stackable spinal fusion cage for deformation and inter-component damage or wear.
- Evaluation of the attachment mechanism for a spinal disc replacement device.

Other potential projects could encompass the testing of any device which is subjected to mechanical loading in use but may include:

- Hip stem fatigue testing
- Dynamic and static testing of fracture fixation devices
- Dynamic testing of new designs of spinal fusion instrumentation and/or spinal disc replacement devices.