

The history of the Laboratory of Biomechanics started in 1993, when Zoltán Csernátóy orthopaedic surgeon looked for research partners for finish his biomechanical experiments by some tests on human femurs. After visit more institutes the Miklós Ybl Technical College seemed to show some cooperation in the execution of the tests. The result of the successful cooperation was that to give an official frame to similar further projects the Department of Orthopaedic Surgery, University of Debrecen and the Miklós Ybl Technical College in 1993 founded the Biomechanical Research Laboratory.

Initially a small 30 m<sup>2</sup> room was the home to the experiments. The College appointed Róbert Horváth (head of department) as the Deputy Head of the Laboratory. The most important result of the period till 2000 was the development of a new principle based, patented spine implant system that was successfully applied in the Department of Orthopaedics, more than 30 cases with an excellent result.



In 2000, the Laboratory has a significant development, when moved to a new, its own, 100 m<sup>2</sup> building, and the same year a mechanical engineer, Sándor Manó joined to the Laboratory as a permanent staff.

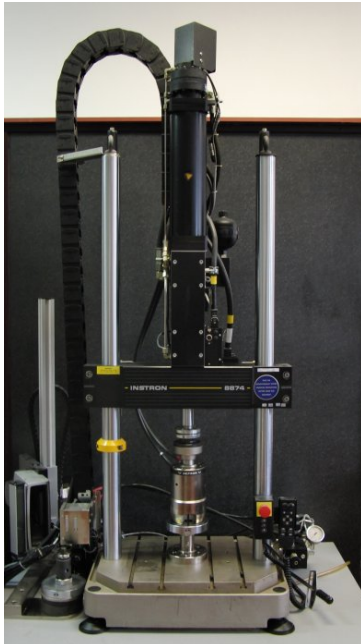
## History

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The professional development of the laboratory had a serious impulse due to these changes, which have significantly contributed by the successful grant projects.

The maximum value of an approximately \$ 350 000 investment was an Instron 8874-type servohydraulic biaxial biomechanical material testing equipment. In Hungary this was the first time when a similar knowledge device was used. This machine has the opportunity to pull and push, as well as screwing for both static and dynamic tests.



In 2005, thanks to a GVOP tender based on the services of the Instron 8874 machine, we founded a new unit named Biomechanical Material Testing Laboratory, whose standard measurement activities was accredited by the National Accreditation Board in 2006. In the same year thanks to another tender, obtaining a ZPrint 310 3D printer, we adopted the application of Rapid Prototyping technology in the medicine in Hungary. We apply this method successfully for the production of custom implants (cranioplasty, plastic surgery), surgical planning (orthopaedic, neurosurgery), and during the development of medical devices.



Since 2000 the number of our device development projects has dynamically grown. As a participant of the major project University Knowledge Center we developed a special operating table for spinal surgery, a knee moving device, as well as a modular-based revision total hip prosthesis system.

In the programme József Öveges from 2006, involving students we planned a so called heel vibration rehabilitation device and successfully realized a clinical trial using the prototype.

In the context of external professional cooperation also there are several finished and running projects. One of the most advanced of these is a patient and horse monitoring system connected to the hippotherapy.

More information about the currently running projects can be found at the [Research page](#) .

The Laboratory of Biomechanics in the case of enough capacity perform services as well, in particular in the field of material testing and 3D printing, and will be happy to accept external (research) partner's willingness to cooperate.

Last but not least in the laboratory, the scientific journal titled [Biomechanica Hungarica](#) was founded and is edited by the staff of the laboratory.

The year 2011 brought an important change for the life of the laboratory, when we will move from the territory of the Faculty of Engineering to the area of the Medical Center. With this step the common operation with the Faculty of Engineering ends, at the same time, the dialy communication between the Laboratory and the Department of Orthopaedic Surgery will highly simplified, since the distance will dramatically decrease. Although the principle will continue to prevail, that the biomechanical – particularly the cadaver — research activity be separated in space from the clinical healing activity.

This year the Laboratory of Biomechanics of the Department of Orthopaedic Surgery is 18 years old. With the moving to a new location, with its well-established professional acknowledgement, and results we feel that it represents a strong professional potential, and we hope it will continue to be a useful background unit of the more effective locomotor surgery.

The full article was published in [Biomechanica Hungarica](#)

Manó S. A Debreceni Egyetem Biomechanikai Laboratóriuma. Biomech Hung 2011;IV(1):7-14.