

LigMaster™ - by Sport Tech, Inc.

The LigMaster™ is an instrumented arthrometer that can provide a fast and easy assessment of ligament function for joints of the shoulder, knee, ankle and elbow.

LigMaster™ measures joint translation in response to force. The Windows based software runs on any PC with a USB port and displays the data in a number of different formats which the operator can use to analyze ligament stiffness, force/strain response, and joint displacement.

LigMaster™ is portable and versatile. A typical laptop computer can power the LigMaster™ system for several hours on a single battery charge!

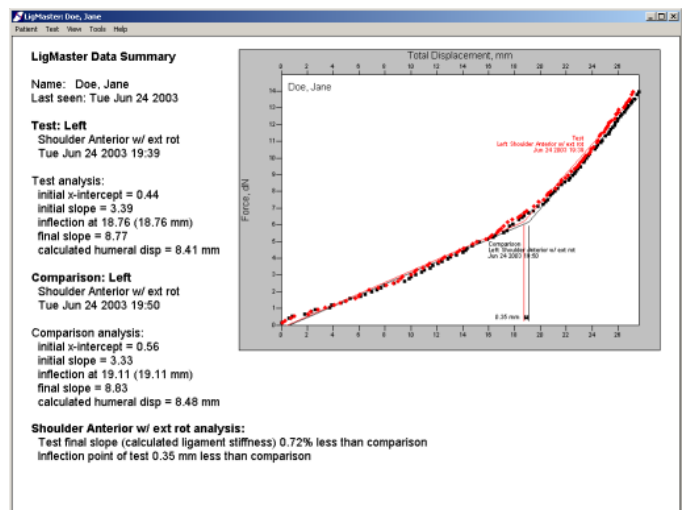


To perform an examination, the technician positions the joint under investigation in the stress frame and turns the force handle slowly to apply a small measured force to displace the joint.

LigMaster™ is based on the Telos GA – II/E stress device, which has a long history of safe clinical use.

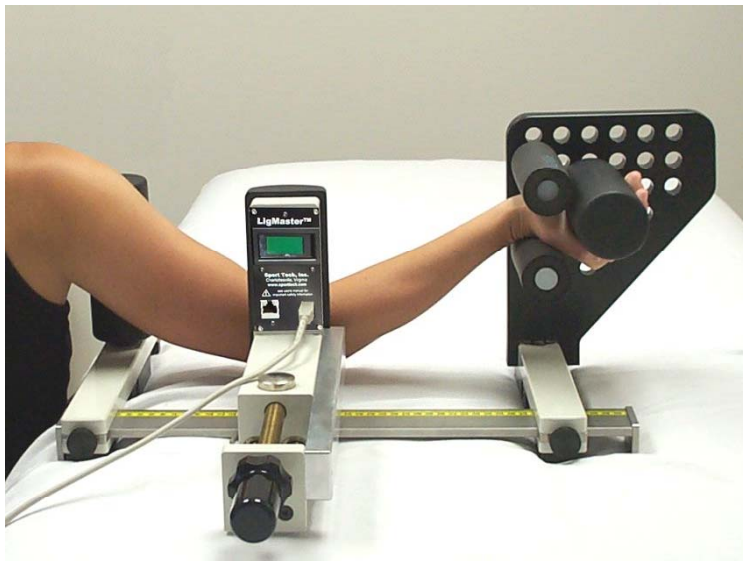
The LigMaster™ software, which runs on a PC computer or laptop, collects force response joint motion data from the electronic sensors and displays the data as a graph of force vs. strain, force vs. displacement or force vs. inversion/eversion (ankle joint only).

Joint response can be compared from side to side or in time series (for example, before and after treatment). Sports medicine professionals can use this information to evaluate the restraining structures of the joint.



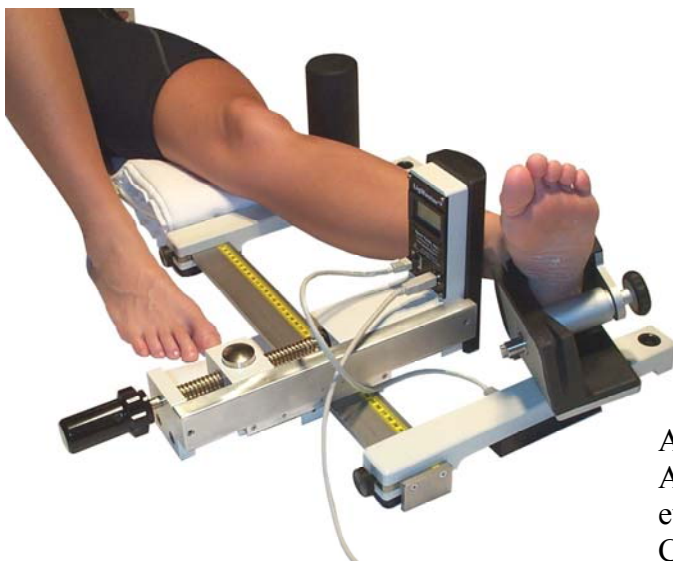
LigMaster™ can perform 12 different tests to assess the ligaments most commonly injured by athletes

Three shoulder tests can be used to evaluate the inferior gleno-humeral ligament and capsule of the shoulder



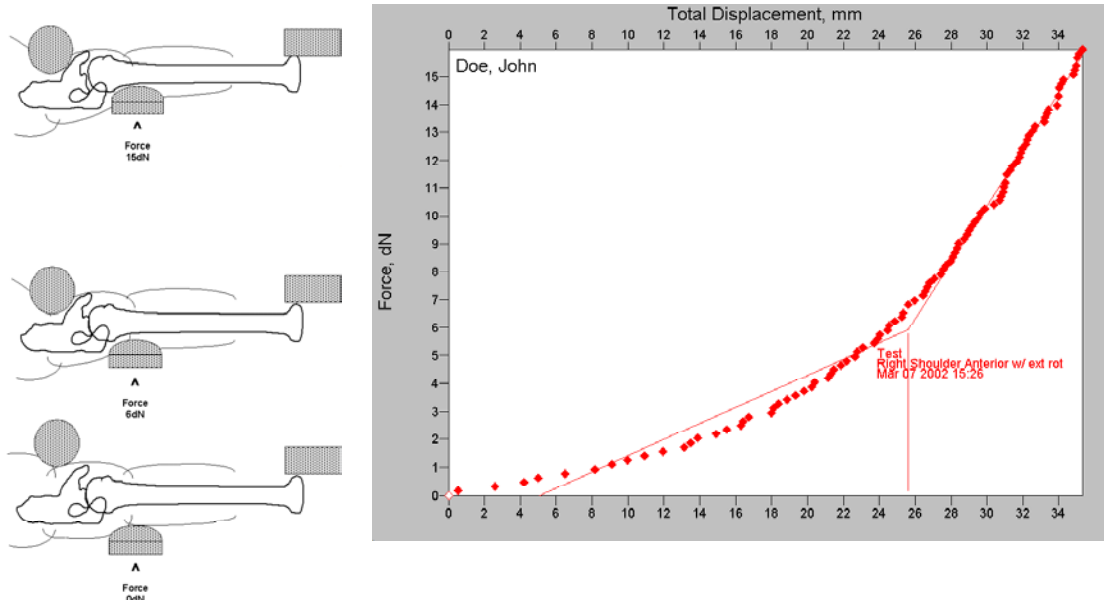
The valgus stress test of the elbow is used to evaluate the medial ulnar collateral ligament

LigMaster can be used for valgus, varus and drawer tests of the knee, to evaluate the ACL, PCL, MCL and LCL

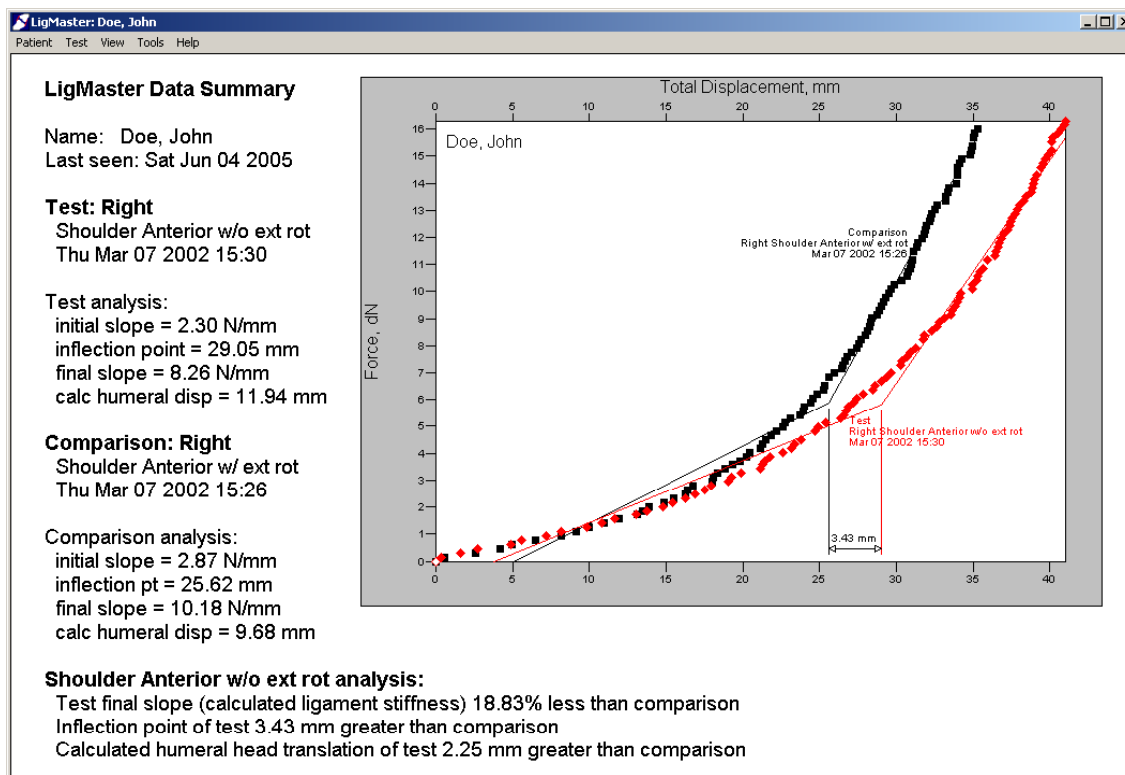


Anterior drawer is used to evaluate ATFL Ankle inversion test is used to evaluate ATFL (foot plantarflexed) or CFL (foot dorsiflexed). Ankle eversion test is used to evaluate deltoid ligament

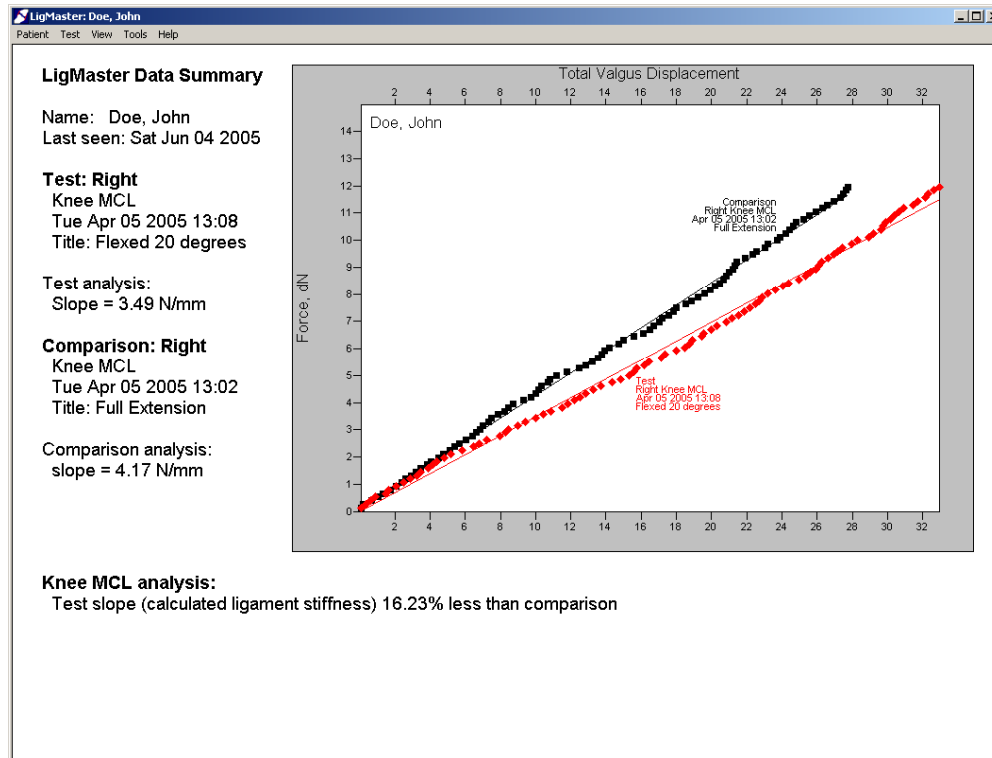
LigMaster works by measuring joint translation in response to force. The shape of the force/response curve reflects characteristic of each joint. For the example below (anterior shoulder with exterior rotation) as force is applied to the joint, the soft tissue surrounding the joint is compressed and/or displaced. As force increases, the amount of soft tissue compression decreases, and the ligament becomes taut. With further increases in force, the joint is constrained predominantly by the ligament



The LigMaster software analyzes the joint response using algorithms that are specific to each joint type. For each joint type, LigMaster calculates relevant parameters and displays them in an analysis summary. Shown below is a comparison of an anterior shoulder test, with the arm in neutral position and with 90 degrees of rotation. Joint response can be compared from side to side, to aid in the diagnosis of ligament injury, or compared over time, to measure progress of rehabilitation. Specific information on each joint can be found in the LigMaster user manual, which can be downloaded from the Sport Tech website.



Sport Tech's mission is to provide quality measurement and analytical tools to sports medicine professionals. Our goal is to apply innovative engineering and biotechnology to advance the field of Kinesiology, and to help our customers provide the best possible diagnosis, treatment, monitoring and rehabilitation of sports injuries. Sport Tech encourages customer feedback and new feature requests as we continuously improve our products to stay on the leading edge of sports medicine instrumentation.



LigMaster is currently being used at 4 beta sites: University of Virginia, University of Florida, Arizona School of Health Sciences, Champion Sports Medicine. Several studies using the LigMaster in sports medicine research have been completed with over 400 subjects tested cumulatively.

Five studies which demonstrate the utility of LigMaster for the shoulder, MCL, ACL and elbow will be presented at the June NATA conference. See the conference schedule for details:

- **Mon Jun13, 1:00 – 2:00** ICC, Rm 110 Lobby **MCL Stiffness and the Valgus Stress Test** Patricia Aronson, MEd, ATC
- **Tue Jun14, 9:00 – 9:15** ICC, Rooms 107-108 **Reliability of the Ligmaster Computerized-Stress Device for Measuring Glenohumeral Joint Laxity and Stiffness in Baseball Pitchers** Eric Sauers, PhD, ATC
- **Tue Jun14, 9:15 – 9:30** ICC, Rooms 107-108 **High School Baseball Pitchers Demonstrate Side-to-Side Symmetry in Glenohumeral Joint Laxity and Stiffness** Scott Crawford, MS, ATC
- **Wed Jun15, 3:00 – 4:00** ICC, Rm 110 Lobby **MCL Stiffness and the Valgus Stress Test** Patricia Aronson, MEd, ATC
- **Wed Jun15, 3:00 – 4:00** ICC, Room 110 Lobby **Difference In ACL Stiffness at Two Points In the Menstrual Cycle In Women Taking Oral Contraception and Women Not Taking Oral Contraception** Laura Goloski, MEd, ATC
- **Wed Jun15, 3:00 – 4:00** ICC, Room 110 Lobby **Wrist Flexor Strength Is Not Related to Ulnar Collateral Ligament Strain** Carrie Oliver, MEd, ATC

LIGMASTER™ is made in the United States of America and protected by United States patents 6,419,645 and 5,724,991