ACL reconstruction. Pressure measuring film was inserted between tibia and femur, and subject to 1000N axial load using an uniaxial testing machine. The superlow film was used to assess the average and maximum tibiofemoral pressure, and the contact area at 0, 15, 30 and 45degrees. Three conditions were evaluated: 1) intact ACL(Int), 2)DB ACL reconstruction, and 3)SB ACL reconstruction. The pressure measuring films were scanned after the experiment and the images evaluated by specific software. Statistical analysis was performed using the Repeated Measures Anova. The level of significance was set a prior at $p<.05$.

Results: The average pressure in the lateral compartment of DB and SB groups at all flexion angles tested was not different from the intact ACL group. However, at 15 degrees SB had higher pressure than DB. The average pressure in the medial compartment at 15, 30, and 45 degrees showed no difference between groups. But, at 0 degrees DB had significant less pressure than SB. The maximum pressure in the lateral compartment at all flexion angles showed no difference between groups. The maximum pressure in the medial compartment showed no difference at 0, 30, and 45 degrees, but at 15 degrees DB restored close to normal the maximum pressure values while SB did not. Though no statistical differences were found in several circumstances regarding to average and maximum pressure, there was a trend to better restoration in the DB group compared to SB.

DB restored the contact area in the lateral compartment at 0, 15 degrees of flexion to values close to normal while SB did not. At 30 and 45 degrees neither DB nor SB restored the normal contact area in the lateral compartment. In the medial compartment at 0, 15, 30 degrees DB is significant better to SB and restore the contact area close to normal. At 45 degrees there was no difference between DB and SB compared to the normal.

Conclusions: We found that DB has superior restoration of the tibiofemoral pressure and contact area than SB reconstruction. It suggests in our experimental model that DB reconstruction may preserve better the cartilage after ACL reconstruction when compared to SB reconstruction. However, further clinical studies are needed to elucidate clinically this issue.

Computer-Assisted Evaluation of the Kinematics of the AM and PL Bundle and the Value of Parameters According to the IKDC Knee Ligament Examination Form (SS-12). *Hanno Steckel, MD, Patricia Murtha, MD, Ryan Costic, MD, James Moody, MD, Branislav Jaramaz, MD, Freddie Fu, MD*

Summary: The aim of this cadaveric study was to describe the kinematics in the ACL-Intact (ACL-I), PL bundle-Deficient (PL-D), and ACL-Deficient (ACL-D) knee by applying a protocol for computer-assisted evaluation of knee kinematics. Our study demonstrated a force distribution between the two bundles that changes with knee position. Current clinical knee laxity measurements may not be suited for detecting subtle changes (like PL deficiency) in the ACL anatomy, and therefore might fail to assess outcome differences in various ACL reconstruction techniques.

Purpose: The double bundle concept is an accepted model for describing both the anatomy and the tension patterns of the AM and PL bundles in the ACL. The aim of this cadaveric study was to describe the kinematics in the ACL-Intact (ACL-I), PL bundle-Deficient (PL-D), and ACL-Deficient (ACL-D) knee by applying a protocol for computer-assisted evaluation of knee kinematics.

Methods: An optical position measurement system was used to acquire knee joint motion ($n=10$) during clinical evaluations by tracking markers rigidly attached to the bones. The protocol included acquisition of AP translations and IE rotations, and evaluation of the IKDC knee ligament examination form.

Results: Comparison of the AP translation between PL-D and ACL-D states demonstrated an increase at 0°, 15° and 30°. Comparison of IE laxities did not show any significant change between ACL-I, PL-D and ACL-D. The instrumented and the manual Lachman test, the total AP translation at 25° and 70°, and the pivot shift test showed differences between the PL-D and ACL-D states.

Conclusions: Our study demonstrated a force distribution between the two bundles that changes with knee position. Current clinical knee laxity measurements may not be suited for detecting subtle changes (like PL deficiency) in the ACL anatomy, and therefore might fail to assess outcome differences in various ACL reconstruction techniques. An instrumented measurement of rotational laxity needs to be evaluated as a step towards a more precise kinematic test of knee stability not only in the native and torn ACL but also in the reconstructed knee.

Mid-Term Results of ACL-Rupture Treatment with the "Healing Response" Procedure (SS-13). *Holger Grehn, MD, Martin Reese, MD*

Purpose: Retrospective evaluation of the minimal invasive, "Healing response" procedure in the treatment of a ACL-rupture in relatively young patients.

Method: We treated 22 patients with a mean age of 32,5 years (16-45 years) after a proximal ACL-rupture