Twenty-four NCAA Division I females in the sports of volleyball, basketball, and soccer volunteered for a study to determine if there is a difference in dynamic control during jump landing females that have not had Anterior Cruciate Ligament reconstructed (ACLR) surgery and ones that have. Participants with ACLR were matched to participants in the healthy group based on sport and by similar age, height and mass. Participants with ACLR knees had undergone surgery at least 1 year before the study was done. Yet, of the 12 participants with ACLR knees, 7 of the athletes reported a noncontact mechanism of injury, and 2 reported contact mechanisms. The mechanisms of injury were not available for 3 of these athletes. These athletes went through different tasks to determine their time-to-stabilization (TTS), which is used to assess the time that participants take to attain a stable position after a jump-landing task, giving an indication of dynamic postural stability and ground reaction forces (GRF). Participants stood behind a mark on the floor and jumped off forward, hit a target with their fingers, and landed on the force platform on their designated foot. They had to hold their landing, put their hands on their hips as soon as possible, and hold that position for ten seconds to get a measurement. The ACLR group took longer to stabilize their knees in the anterior-posterior (APTTS) and medial-lateral TTS (MLTTS) than the control group with healthy knees. The ACLR group had an average time of 2.01 ± 0.15 seconds while the control group had an average time of 1.90 ± 0.07 seconds. After concluding these results, the athletes in the ACLR group had difference of 0.11 in the time that it took them to stabilize their jump than the control group with the healthy knees. Due to having experience with deficiency with the ACL, the ACLR athletes will not have the same muscular strength that a person with a normal knee will have due to the repair of a ligament.

Keywords: anterior cruciate ligament, time-to-stabilization, jump landing