Activity at a glance

Preventing lost screws. For this activity, if students are unscrewing and removing the femur access door themselves to knockout the ligaments, we recommend that you remove the femur door access screw prior to the start of the activity and keep it somewhere secure so you can reattach it after the students finish. This prevents students from losing the screw during the activity. The students don't need to screw the door back into place each time they knock out a ligament—they can simply hold the door in place with one hand while simulating the motions with the other. If you do happen to lose the femur access door screw, you can use one of the screws for the cross-section bracket, stored on Parts Plate A; they're the same size (M3x16 mm) and the bracket will stay connected pretty well to the cross-section plate without any screws.

Time to complete	Approximately 2-2.5 hours
Age level	Advanced high school, College, or Professional school
Bloom's level(s)	• BL3 - Apply • BL4 - Analyze • BL5 - Evaluate
Learning objective	After completing this activity, students will be able to **infer** (BL4 - Analyze) knee ligament function using a knockout **experiment** (BL3 - Apply) and motion **simulations** (BL5 - Evaluate) and use these results to **explain** (BL5 - Evaluate) patterns of knee ligament injury and recommended strategies for knee injury avoidance.

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Assessment	• **Students:** On page 1 of the worksheet, students can assess their own work for the MCL using "Assess" boxes in the activity guide. There are no answers provided to students for the remaining ligaments nor for the challenge questions. • **Educators:** Educators can assess students' work for the remaining ligaments on page 1 of the worksheet and the challenge questions using the answer key (only visible to educators).
Materials needed	See Materials needed

Systems/Tissue types	• Connective tissues
	  ◦ Bones
	  ◦ Cartilage
	  ◦ Ligaments

Core concepts	• ??Structure & function • System integration
Competencies	• Data integration • Motion analysis • Observation • Scientific reasoning • Scientific communication
Activity ID	HSKN3

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