



THANK YOU FOR PURCHASING SAWBONES ALICE KNEE SIMULATOR WITH BASE

The ALICE (Anterior cruciate Ligament Integrity Critical Evaluation) Knee Simulator is designed for educators in athletic training, medical school/ residency, and physical therapy. Users of this product should be licensed health care providers/ educators or students in athletic training, medical school/residency, or physical therapy school.

RATIONALE FOR USE

The ACL tear is a common knee injury (250,000/year¹), and positive post-injury outcomes rely on a correct initial diagnosis. Unfortunately, the majority of ACL injuries seen in family practice clinics and emergency departments are incorrectly diagnosed as a knee sprain or meniscus tear.²⁻⁴ Additionally, the ACL tear typically occurs as an origin or insertion avulsion, or may rupture mid-substance. The origin and insertion ACL tears may appear as intact on an MRI, resulting in diagnostic errors, making the accurate clinical diagnosis more significant.⁵ Patients who receive an inaccurate diagnosis and return to work or sport are at risk of suffering articular cartilage or meniscus damage, which may lead to premature osteoarthritis or loss of joint function.^{2-4,6}

GROUP SIMULATION PATIENT SCENARIOS

GROUP 1 SCENARIOS: Completely torn ACL without guarding	pg 2-5
GROUP 2 SCENARIOS: Completely torn ACL with guarding	pg 6-9
GROUP 3 SCENARIOS: Partially torn ACL	pg 10-13

1. Use one of the included simulated patient scenarios from a group or create your own.
2. Have a standardized patient portray the injured patient.
3. When it is time for the student to perform the knee clinical diagnostic tests, if you have one ACL Integrity Simulator, set it as intact and have the student perform the Lachman test. Then, reset the ACL Integrity Simulator as a completely torn ACL without guarding and have the student perform the Lachman test again.
4. When it is time for the student to perform the knee clinical diagnostic tests, if you have two ACL Integrity Simulators, use one ACL Integrity Simulator (with an intact ACL) as the uninvolved knee, and a second ACL Integrity Simulator as the involved knee (with a completely torn ACL without guarding).

GROUP 1 - SIMULATION PATIENT #1

CASE NAME	Jamar Brown
PRESENTING SITUATION	Jamar Brown, age 37
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are fully dressed for work as a plumber (jeans, uniform shirt, work boots) You appear to be limping You are concerned about your knee feeling weird and giving out on you You are concerned about not being able to work
OPENING STATEMENT	"My knee doesn't feel right. I don't feel stable when I'm walking and turning."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Jamar was walking to his truck in the parking lot and work and slipped on the ice. Fell down but didn't notice significant pain or instability in his knee. States this happened 3 weeks ago, and his knee hasn't felt right since.
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Obese (BMI 43) Does not smoke Consumes alcohol regularly (2-3/day) Hasn't seen his primary care physician in 5 years
SOCIAL HISTORY	<ul style="list-style-type: none"> 37 yo male Plumber for past 18 years Lives alone Introvert personality Does not exercise regularly
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents still living Mother has HTN Father has high cholesterol 1 grandparent living Maternal grandmother suffered fatal stroke Maternal grandfather passed from complications of type II diabetes Paternal grandmother passed from breast cancer Paternal grandfather living
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> L. knee instability Knee flexion 105 degrees (uninvolved knee flexes to 115°) Pulse 79 bpm BP 128/86
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be concerned about instability Appear to be concerned about being able to work

GROUP 1 - SIMULATION PATIENT #2

CASE NAME	Daniela Cruz
PRESENTING SITUATION	Daniela Cruz, age 19
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are fully dressed for basketball game (uniform, shoes) You are sweating You appear to be in severe pain and grabbing your knee You are concerned about the pop you felt and the pain you are experiencing You are concerned about not being able to continue playing
OPENING STATEMENT	"My knee. It hurts so bad."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Daniela was driving the lane and jump stopped Felt a pop in her R. knee Immediately fell to the ground and grabbed her R. knee Crying
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, Division I basketball player Does not smoke Does not consume alcohol Current on all immunizations Attends annual physicals with her primary care physician
SOCIAL HISTORY	<ul style="list-style-type: none"> 19 y.o. female College freshman; 3.9 GPA Lives in the dorms with 1 roommate Parents are married and both attend most games (1 of them is at every game) Mother is an accounting professor at college JJ attends Father is a software engineer 2 siblings (1 older brother, 1 younger sister) Introvert personality
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> 3 grandparents living (2 attend games regularly) Maternal grandmother suffered fatal heart attack Paternal grandfather: history of Type II Diabetes
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Severe R. knee pain Unwilling to move knee due to pain Pulse 150 bpm BP 136/90
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be experiencing severe pain and discomfort Appear to be rolling around and grabbing your right knee Appear frustrated and upset about getting hurt and not being able to return to play

GROUP 1 - SIMULATION PATIENT #3

CASE NAME	Joseph Peters
PRESENTING SITUATION	Joseph Peters, age 18
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are fully dressed for football practice (uniform, pads, shoes) You are sweating You appear to be in severe pain and grabbing your knee You are concerned about the pop you felt and the pain you are experiencing You are concerned about not being able to continue playing
OPENING STATEMENT	"My knee. That jerk rolled up on me."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Joseph is an offensive lineman Teammate fell and rolled up on Joseph' left knee Immediately fell to the ground and grabbed his L. knee Wailing in pain
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, high school football player Does not smoke Does not consume alcohol Current on all immunizations Physical is current from the beginning of the school year
SOCIAL HISTORY	<ul style="list-style-type: none"> 18 y.o. male High school senior, 2.8 GPA Lives at home with both parents Parents are married and both attend most games (1 of them is at every game) Mother is a cashier at Walmart Father is a concrete contractor Both parents are smokers 2 siblings (2 older sisters) Extrovert personality
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> 4 grandparents living (3 attend games regularly) Maternal grandmother history of HTN Paternal grandfather: history of Type II Diabetes
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Severe L. knee pain Unwilling to move knee due to pain Pulse 160 bpm BP 140/86
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be experiencing severe pain and discomfort Appear to be rolling around and grabbing your left knee Appear frustrated and upset about getting hurt and not being able to return to play

GROUP 1 - SIMULATION PATIENT #4

CASE NAME	Ruaa Reddy
PRESENTING SITUATION	Ruaa Reddy, age 25
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed for your job as a biomedical engineer You are calm and composed You are here for a left knee evaluation
OPENING STATEMENT	"I went skiing a few weeks ago and did something to my knee. I finished that run, but then sat in the lodge the rest of the day."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Patient went skiing and injured her knee Does not recall hearing/feeling a pop Indicates her knee swells after any type of physical activity and feels different
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, biomedical engineer Does not smoke Drinks occasionally (1-2 drinks/week) Current on all immunizations Last physical with his primary care physician was two years prior
SOCIAL HISTORY	<ul style="list-style-type: none"> 25 y.o. female Lives with girlfriend Girlfriend is an actuary Runs 15-20 miles/week
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents are living and married 32 years 3 grandparents living Maternal grandfather passed from prostate cancer
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Mild knee pain at rest Increased knee pain with active flexion (AROM 125°) Pulse 64 bpm BP 108/70
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be concerned about persistent knee swelling Not anxious about returning to work

GROUP 2 - SIMULATION PATIENT #1

CASE NAME	Kyan Lee
PRESENTING SITUATION	Kyan Lee, age 27
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed in shorts and a t-shirt You have not been working since your injury You are here for a knee injury evaluation You are not sweating You are experiencing a constant ache in your left knee You are concerned about being able to return to work
OPENING STATEMENT	"I was playing ball with my kids in the backyard, jumped our fence to retrieve the ball, and felt a pop and immediate pain my knee."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Kyan was playing with his kids in the backyard, jumped the fence, landing on his left foot. Felt a pop Felt immediate disability in left knee Felt immediate pain in left knee
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, ER RN Does not smoke Consumes alcohol recreationally (~1-2 drinks/week) Current on all immunizations
SOCIAL HISTORY	<ul style="list-style-type: none"> 27 y.o. male Married Lives at home with wife, 5-year old daughter and 3 year old daughter Wife is an attorney Extrovert personality
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents are still living Both parents are retired 2 grandparents living Maternal grandfather suffered fatal stroke Paternal grandfather died of lung cancer
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Moderate L. knee pain Unable to flex knee past 45 degrees due to swelling Pulse 58 BP 108/68
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be experiencing mild-moderate knee pain Appear to experience greater pain with knee movement Appear stressed about getting hurt and not being able to work

GROUP 2 - SIMULATION PATIENT #2

CASE NAME	Carla Diaz
PRESENTING SITUATION	Carla Diaz, age 31
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed in clothes for your job as a veterinarian You are nervous about your knee injury You have been working, but are concerned about how your knee hurts so bad
OPENING STATEMENT	"I was vaccinating cows at work and a steer kicked me in the front of my knee."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Patient injured her knee at work as a veterinarian Patient heard and felt a pop in her right knee Patient indicates she had immediate intense pain Patient indicates her knee did not swell, but still has a lot of pain
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Type I diabetic, large animal veterinarian Does not smoke Drinks occasionally (1-2 drinks/month) Current on all immunizations
SOCIAL HISTORY	<ul style="list-style-type: none"> 31 y.o. female Married Lives at home with husband and 5-month old daughter Husband is an accountant Does rowing workout daily
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents are still living and both in good health Both parents are retired and traveling together 4 grandparents living and all in good health
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Moderate R. knee pain AROM 140 degrees Pulse 64 BP 112/66
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be experiencing moderate knee pain – aching Knee pain sometimes keeps you up at night Appear concerned about knee injury with a 5-month old at home

GROUP 2 - SIMULATION PATIENT #3

CASE NAME	Maddie Penske
PRESENTING SITUATION	Maddie Penske, age 42
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed for your job as a mortgage loan officer You are mildly concerned about your knee injury You have been working without interruption d/t knee injury
OPENING STATEMENT	"I was playing volleyball in my rec league, landed on my left foot, and felt a pop in my left knee."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Patient injured her knee playing rec volleyball Patient felt a pop in her left knee Patient indicates she had mild pain
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> History of left knee ACL reconstruction s/p 20 years Otherwise generally healthy, mortgage loan officer Does not smoke Does not drink Current on all immunizations
SOCIAL HISTORY	<ul style="list-style-type: none"> 42 y.o. female Married Lives at home with husband, 12 y.o. daughter and 9 y.o. daughter Enjoys playing volleyball, biking, sports with her kids
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents are living and married 40 years 1 grandparent is living and in overall good health Maternal grandfather passed from massive stroke Paternal grandfather passed from colon cancer Paternal grandmother passed from cervical cancer
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Mild L. knee pain AROM 115 degrees Pulse 72 BP 118/74
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be experiencing mild knee pain Appear to know about exam d/t ACL history

GROUP 2 - SIMULATION PATIENT #4

CASE NAME	Nihal Patel
PRESENTING SITUATION	Nihal Patel, age 16
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed in sweatpants and sweatshirt You appear stressed and concerned about knee pain and swelling You are concerned about why your knee is swollen, why it feels unstable You are concerned about your wrestling match this weekend
OPENING STATEMENT	"I went in for a shot and my knee twisted under me. I fell down and had to forfeit my match."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Patient injured his right knee during wrestling match 2 days ago Patient did not feel or hear a pop, but had immediate pain after his R. knee twisted Patient indicates his knee is swollen
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, high school athlete (wrestler) No history of anxiety or depression Currently experiencing anxiety of being able to wrestle this weekend Does not smoke Does not consume alcohol
SOCIAL HISTORY	<ul style="list-style-type: none"> 16 y.o. male High school sophomore; 3.75 GPA Lives at home with both parents Parents are married and attend all matches Mother is a rheumatologist Father is vice president at a bank 2 siblings (1 older sister, 1 younger sister) Introvert personality
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> 4 grandparents living (all attend all home matches)
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Moderate R. knee pain AROM 110 degrees Pulse 52 BP 104/68
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be limping when you walk in Appear to be experiencing moderate knee pain Appear to be anxious about upcoming wrestling match

GROUP 3 - SIMULATION PATIENT #1

CASE NAME	Piper Roberts
PRESENTING SITUATION	Piper Roberts, age 17
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed in sweat pants and a hoodie You do not appear to be in pain or discomfort You are concerned about how your right knee feels funny You are concerned about playing college soccer in the fall
OPENING STATEMENT	"I played a soccer game about a week ago, and ever since in practice my right knee feels weird."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Denies history of recent right knee injury Denies history of previous right knee injury Complains of right knee feeling weird/off during soccer practice Complains of right knee aching after soccer practice
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, high school athlete (soccer) No history of anxiety/depression Currently experiencing anxiety about being able to play college soccer in the fall Does not smoke Does not consume alcohol Current on all immunizations
SOCIAL HISTORY	<ul style="list-style-type: none"> 17 y.o. female High school senior; 3.2 GPA Lives at home with both parents Parents are married and attend most games (dad all, mom most) Mother is a neurologist Father is a 3rd grade teacher 3 siblings (2 older brothers, 1 older sister) Extrovert personality
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> 4 grandparents living (most attend all home games and some away games)
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Mild right knee pain after soccer practice Piper notes mild right knee swelling after soccer practice Pulse 60 BP 104/72
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be mildly concerned about knee swelling Appear to be moderately concerned about knee feeling funny and being able to play soccer You are not currently limping, but do after soccer practice

GROUP 3 - SIMULATION PATIENT #2

CASE NAME	Amelia Washington
PRESENTING SITUATION	Amelia Washington, age 26
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed in police uniform You appear to be stressed and anxious about being able to work You are concerned about persistent knee pain
OPENING STATEMENT	"I was running down a perp and stepped in a hole. My left knee hasn't felt right since then"
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Denies history of L. knee injury Denies history of L. knee pain Complains of L. knee "giving out" Complains of L. knee persistent swelling/soreness
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, police officer Does not smoke Consumes alcohol occasionally (2-4 drinks/month) Current on all immunizations Annual physical was completed two months prior
SOCIAL HISTORY	<ul style="list-style-type: none"> 26 y.o. female Lives with 2 roommates (1 male, 1 female) Triathlete
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents are living and married 35 years Mom is cancer survivor (cervical) Father has hypothyroidism
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> Mild L. knee pain/discomfort Indicates her knee swells after she works out Pulse 74 BP 118/74
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be moderately concerned about being able to work Appear to be moderately concerned about persistent knee swelling

GROUP 3 - SIMULATION PATIENT #3

CASE NAME	Amrita Acharya
PRESENTING SITUATION	Amrita Acharya, age 23
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed in men's capri pants and tank top You appear to be very stressed about your knee You are concerned about being able to continue your job as a professional dancer/choreographer
OPENING STATEMENT	"I was trying a new dance move and twisted my knee. It immediately hurt and has just felt off since then."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Denies previous history of R. knee injury Complains of R. knee feeling different/unstable Complains of R. knee swelling after dance workouts
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> History of EIA, otherwise generally healthy Smokes occasionally when consuming alcohol Consumes alcohol occasionally (3-4 times/month) Current on all immunizations Doesn't currently have a primary care physician
SOCIAL HISTORY	<ul style="list-style-type: none"> 23 y.o. male Lives with boyfriend Boyfriend is also a professional dancer
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents are living and married 25 years All 4 grandparents are living Maternal grandmother has COPD, other 3 in overall good health
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> You just came from dance practice, so appear to be limping due to pain/swelling Pulse 64 BP 112/76
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be concerned about knee swelling/pain/instability Appear to be concerned that you cannot dance like you would like

GROUP 3 - SIMULATION PATIENT #4

CASE NAME	Lucas Martinez
PRESENTING SITUATION	Lucas Martinez, age 32
PSYCHOLOGICAL PROFILE	<ul style="list-style-type: none"> You are dressed in scrubs for your job as a dentist You appear to be calm and composed
OPENING STATEMENT	"I was playing slow pitch softball and running to first base. I stepped on the bag awkwardly and hyperextended my knee. It has been swelling/sore since then."
HISTORY OF PRESENT INJURY	<ul style="list-style-type: none"> Indicates he injured his L. knee about 3 years ago, but saw a doctor and was told nothing was wrong. Complains of intermittent L. knee swelling after working all day
PAST MEDICAL HISTORY	<ul style="list-style-type: none"> Generally healthy, dentist Does not smoke Consumes alcohol occasionally (4-6/month) Current on all medications
SOCIAL HISTORY	<ul style="list-style-type: none"> 32 y.o. male Lives with wife and 4 children (8, 6, 4, and 2 y.o. girls) Bikes 50-60 miles/week
FAMILY MEDICAL HISTORY	<ul style="list-style-type: none"> Both parents are living and married 40 years Both parents are retired and live in the same city Both parents in good health All 4 grandparents living and in good health
PHYSICAL EXAM FINDINGS	<ul style="list-style-type: none"> You just came from work, so L. knee is swollen and sore You've been able to continue biking, but not the miles you would like Pulse 58 BP 106/70
SPECIAL INSTRUCTIONS	<ul style="list-style-type: none"> Appear to be concerned about knee swelling Appear to be mildly irritated with inability to bike like you could prior to injury

PATIENT SCENARIOS GRADING RUBRIC: KNEE PATHOLOGY EXAM

NAME: _____

DATE: _____

INTRODUCTION**YES NO**

Student is dressed appropriately as a clinician

☐ ☐

Student/Clinician introduces themselves to patient

☐ ☐**PATIENT DEMOGRAPHICS****YES NO**

Establishes patient name

☐ ☐

Establishes patient age

☐ ☐

Establishes patient profession

☐ ☐**PAST MEDICAL HISTORY****ESTABLISHES PATIENT PAST MEDICAL HISTORY****YES NO**

Patient height/weight (BMI)

☐ ☐

Patient smoking history

☐ ☐

Patient alcohol consumption

☐ ☐

Patient's family care physician

☐ ☐**ESTABLISHES PATIENT SOCIAL HISTORY****YES NO**

Age

☐ ☐

Establishes living situation

☐ ☐

Establishes exercise regime

☐ ☐**ESTABLISHES FAMILY MEDICAL HISTORY****YES NO**

Establishes is parents are living or deceased

☐ ☐

Establishes father's medical status

☐ ☐

Establishes mother's medical status

☐ ☐

Establishes is grandparents are living or deceased

☐ ☐

Establishes grandparents' medical status(es)

☐ ☐

PHYSICAL EXAM FINDINGS

	YES	NO
Determines knee AROM	<input type="checkbox"/>	<input type="checkbox"/>
Measures patient HR	<input type="checkbox"/>	<input type="checkbox"/>
Measures patient BP	<input type="checkbox"/>	<input type="checkbox"/>
Performs Lachman test correctly	<input type="checkbox"/>	<input type="checkbox"/>
Makes appropriate assessment	<input type="checkbox"/>	<input type="checkbox"/>
Establishes mental health status of patient	<input type="checkbox"/>	<input type="checkbox"/>

ACUTE MANAGEMENT / PATIENT EDUCATION

	YES	NO
Discusses acute management with patient	<input type="checkbox"/>	<input type="checkbox"/>
PRICE	<input type="checkbox"/>	<input type="checkbox"/>
Immobilize injury	<input type="checkbox"/>	<input type="checkbox"/>
Referral if necessary (states who would refer patient to – orthopedic surgeon, mental health counselor)	<input type="checkbox"/>	<input type="checkbox"/>

HOW TO CORRECT LACHMAN TEST PERFORMANCE ERRORS

1. Confirm the ACL Integrity Simulator is positioned correctly on the base – knee flexes over end of base.
2. Confirm student's hands are placed correctly on distal femur and proximal tibia.
3. Have student press down on distal femur with proximal hand.
4. From "neutral" position, have student apply quick and repetitive anterior force to tibia with distal hand.
5. Ask student to report what they feel:
 - a. Excessive anterior translation of the tibia compared to the uninvolved knee.
 - b. Absent endpoint.
6. Remind student that Lachman test proficiency requires practice and repetitions with varying degrees of ACL integrity.

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