



Orthopedics and
Sports Medicine

The Telemedicine Musculoskeletal Examination

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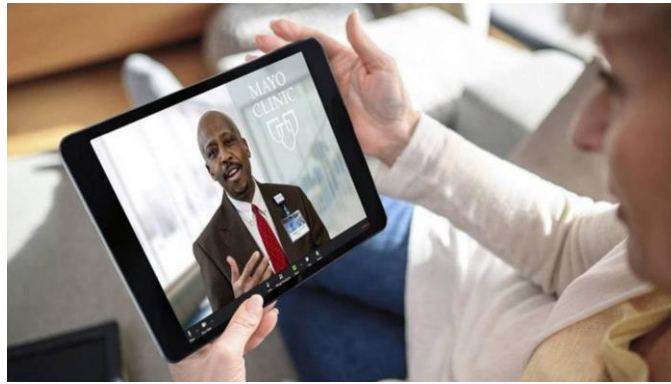
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Telemedicine



- Initially intended to improve health care to patients in remote settings
- COVID-19 has caused explosive growth
- Telemedicine now has a broad clinical scope with the general purpose of providing **convenient, safe, time and cost-efficient care**
- Many institutions are now relying more heavily on telehealth services to continue to **provide medical care** to individuals while also **preserving the safety of healthcare professionals and patients**

Telemedicine in Musculoskeletal Care

- Musculoskeletal complaints frequently present to health care providers; framework important for virtual MSK exam
- We developed a specific set of guidelines, both written and visual, to enhance the information obtained when evaluating the **shoulder, hip, knee, ankle, and cervical and lumbar spine**

Mayo Clinic Proceedings
Telemedicine Musculoskeletal Examination

The Telemedicine Musculoskeletal Examination

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Telemedicine Musculoskeletal Examination

- Written and visual aids to enhance the information obtained when evaluating the shoulder, hip, knee, ankle, and cervical and lumbar spine
- Accompanying videos are included to facilitate and demonstrate specific physical examination techniques which the patient can perform on their own
- Most tests are based on validated physical exam maneuvers performed during face-to-face patient encounters, but have been modified to enable the patient to self-perform the maneuvers



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Telemedicine Musculoskeletal Examination: General Considerations

- Examiner will look at the video image of the patient, but also should occasionally look directly at the camera as that is the equivalent of looking the patient in the eyes.
- Examiner should tell patient that at times the examiner may need to look away to take notes or view various computer screens.
- There may be an audio lag, so try to give the patient two seconds or so after they stop speaking before talking.



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Telemedicine Musculoskeletal Examination: General Considerations

- Uniform history taking and examination sequence promotes efficiency and avoids errors of omission
- The patient is requested to use one finger to point to the maximal area of pain and to delineate any radiating pain.
- Consider demonstrating exam maneuver for the patient, as appropriate.



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Telemedicine Musculoskeletal Examination: General Considerations

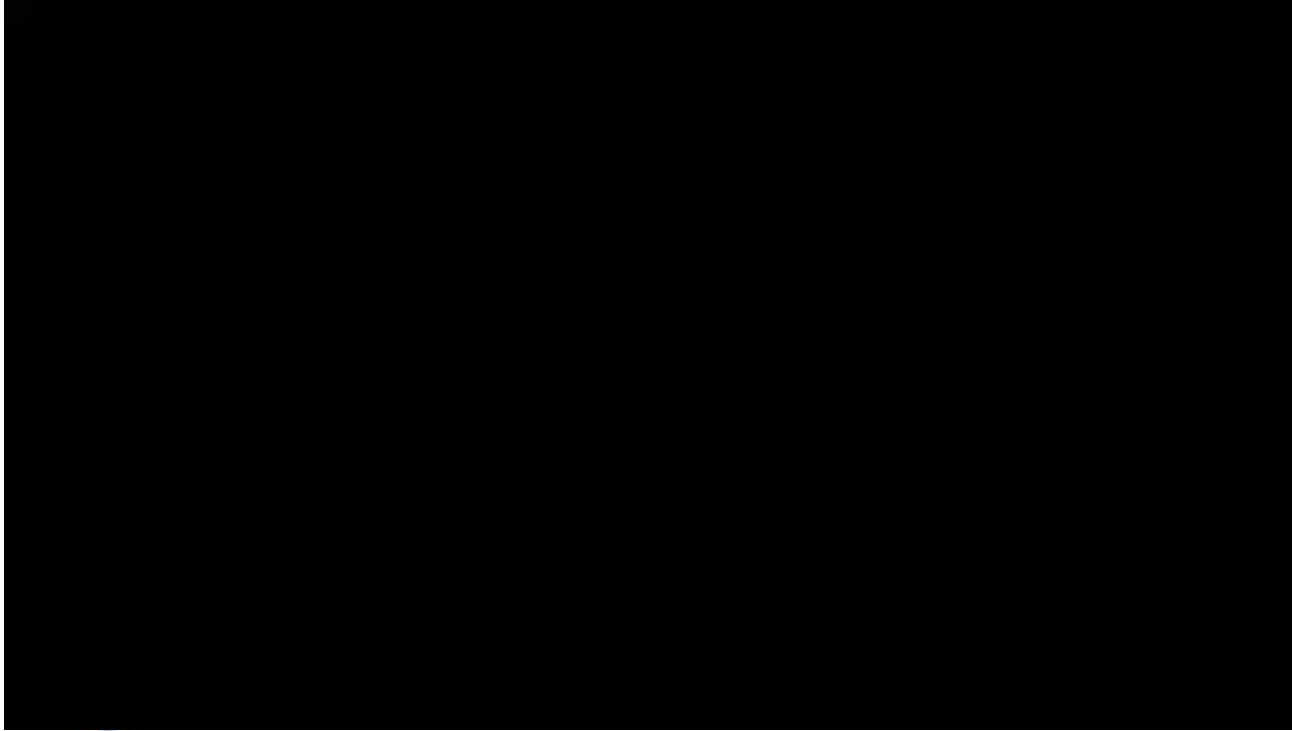
- Adequate room to perform full range of motion of the joints in all planes, gait, and sit to stand transitions.
- The room should be as free of distractions as possible, with uncluttered background and adequate lighting.
- If possible, an additional person to adjust the camera to accommodate different patient positions (i.e. standing, lying, full-body view, etc.).
- If this is an exam of a small child, toys that the child will reach for and manipulate and/or hold for comfort could be utilized.



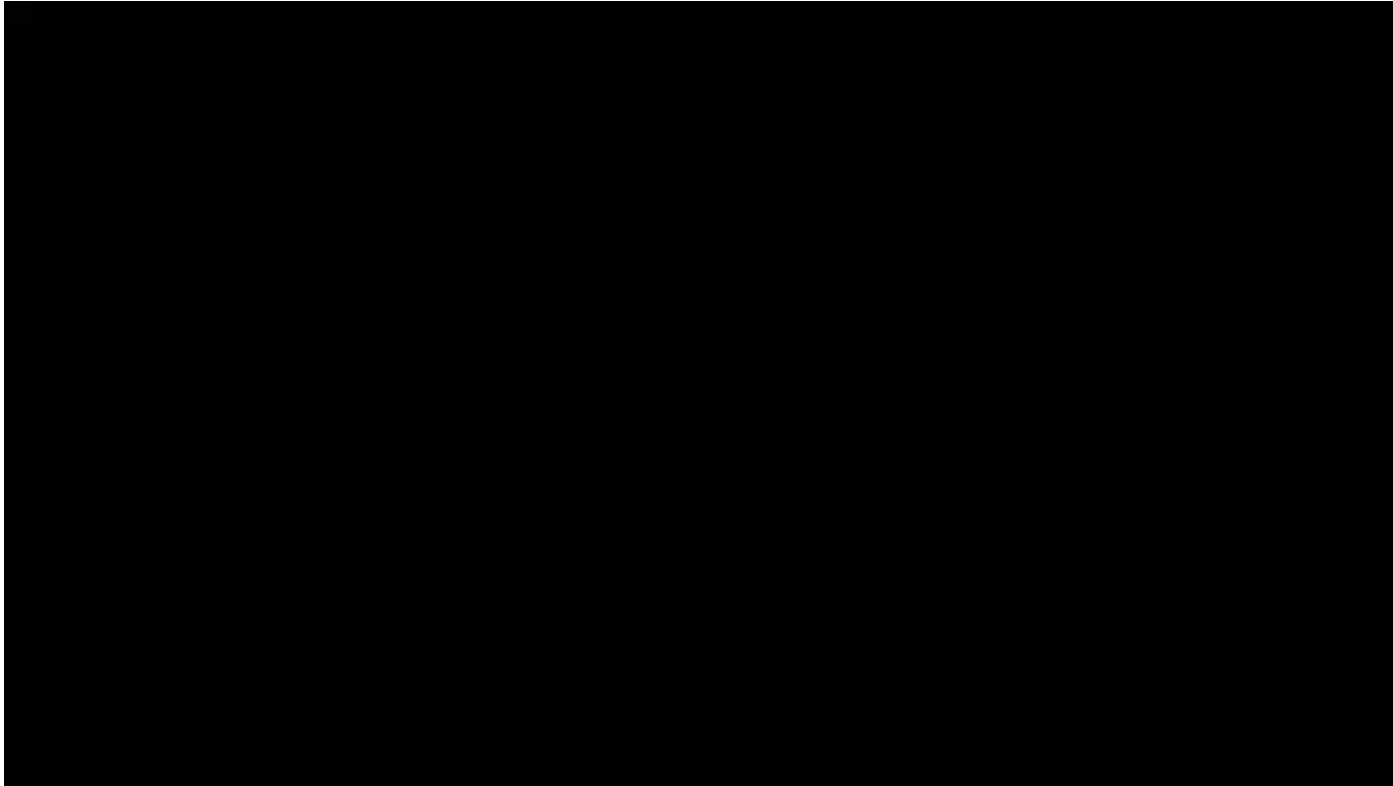
Telemedicine Musculoskeletal Examination: Introduction



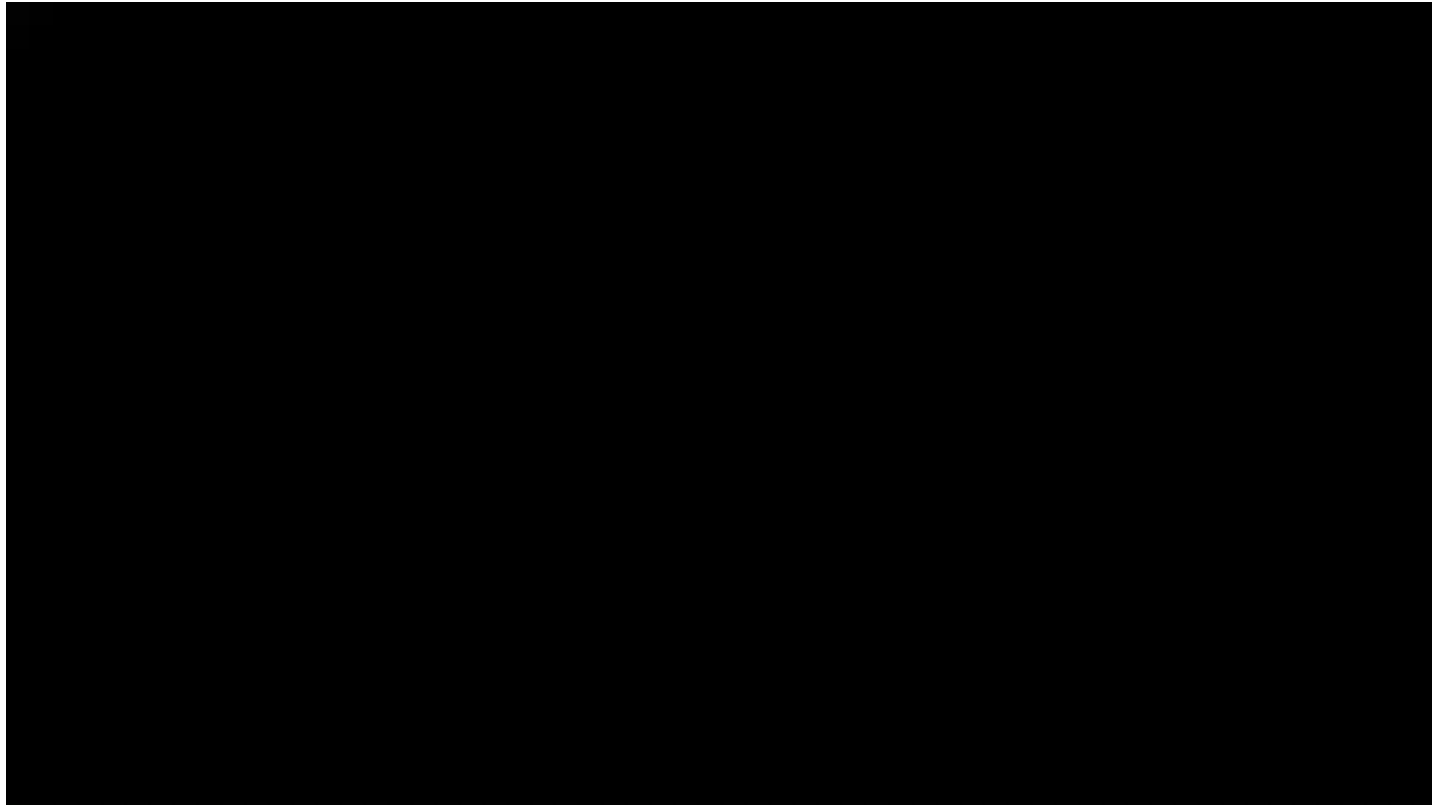
Telemedicine Musculoskeletal Exam: Shoulder



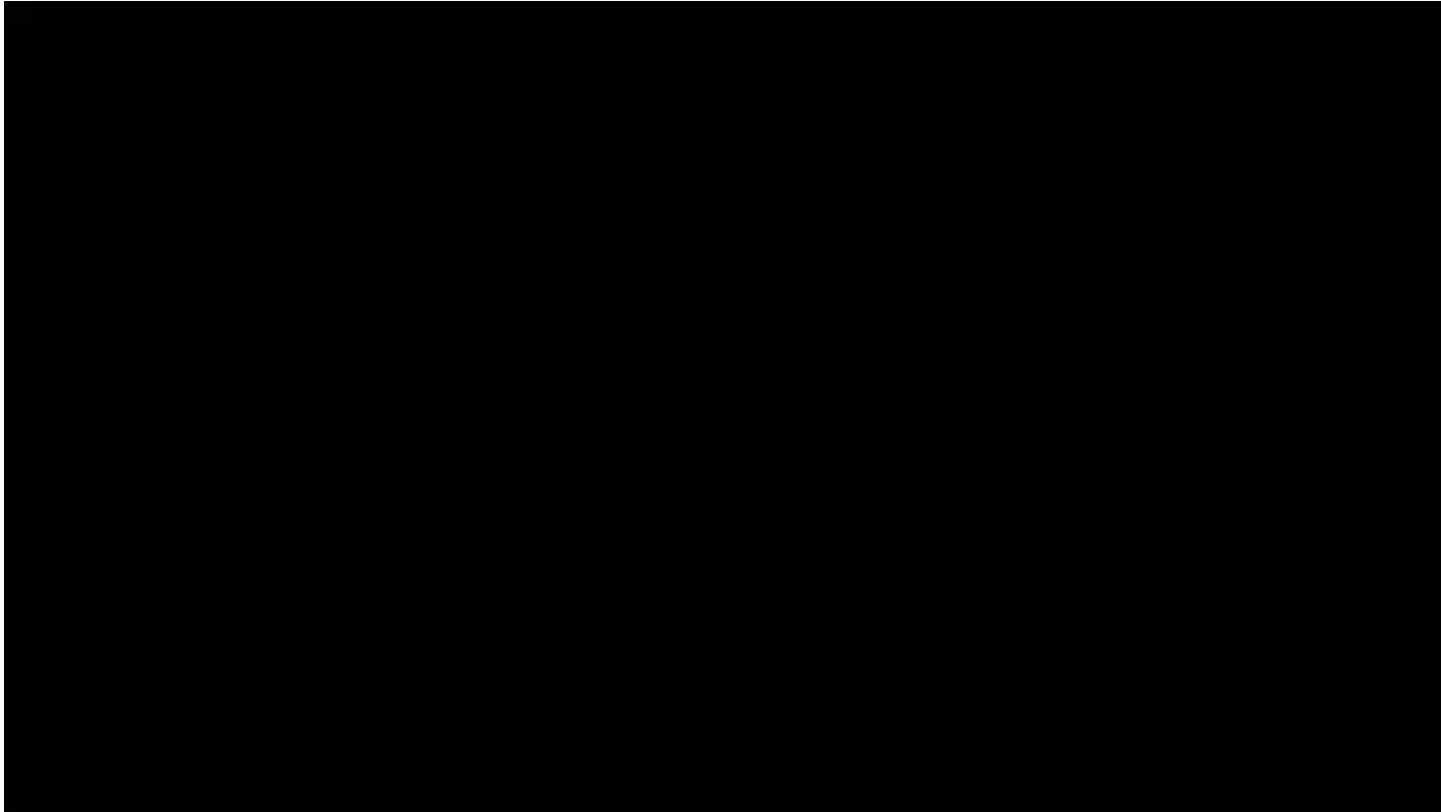
Telemedicine Musculoskeletal Exam: Hip



Telemedicine Musculoskeletal Exam: Knee



Telemedicine Musculoskeletal Exam: Ankle

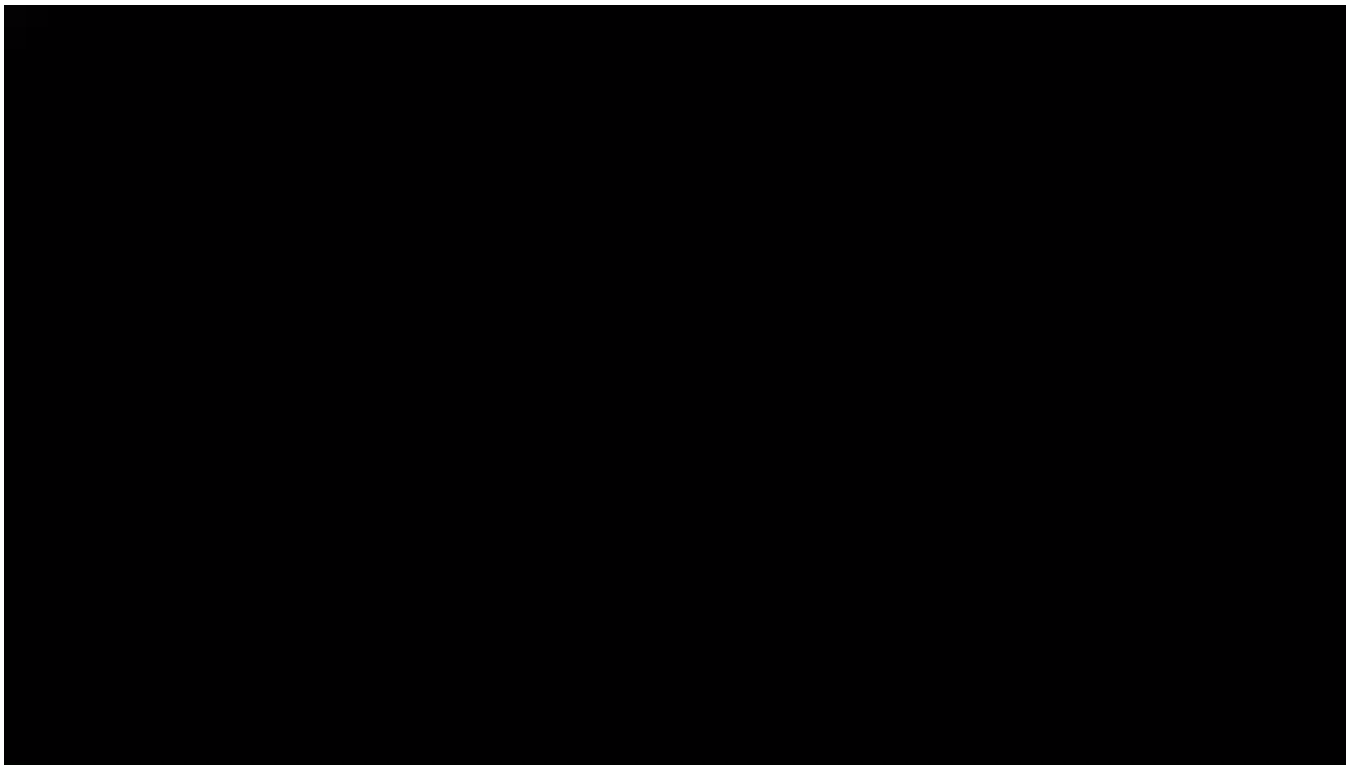


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Telemedicine Musculoskeletal Examination: Spine

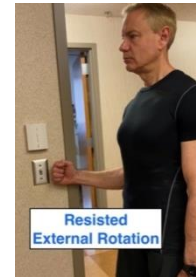
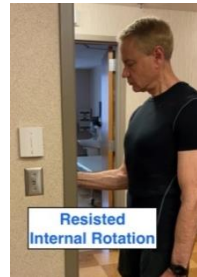


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Telemedicine Musculoskeletal Examination: Pictures



Telemedicine Musculoskeletal Examination

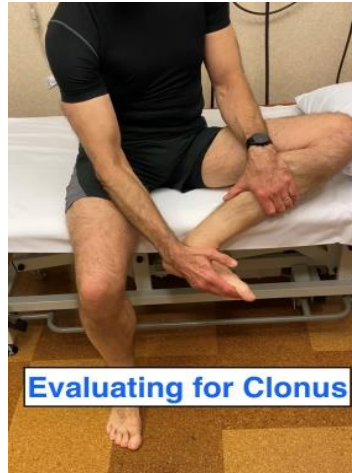
- The patient can use the side of their hand, a long-handled, rubber-headed spatula, or the edge of a smartphone to check their knee jerk reflexes. Demonstration of the maneuver can be helpful. The knee jerk is easiest to elicit if the knee is extended past 90 degrees with heel on the floor as shown. Patient can try to elicit own knee jerks and ankle jerks with feet on the ground, or legs crossed. If using spatula, hold spatula at the end of the handle, and strike below patella with the edge/side of the spatula.



Telemedicine: Self-performed Maneuvers



Biceps Reflex



Evaluating for Clonus



Babinski Reflex



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Telemedicine: Self-performed Maneuvers



Telemedicine Musculoskeletal Exam: Summary

- Telemedicine has played an important role in the delivery of medical services and is likely to be of **continued importance** and use even after the current pandemic
- A virtual musculoskeletal examination can enhance the information obtained when evaluating shoulder, hip, knee, ankle, and cervical and lumbar spine complaints
- Exam can be **modified** according to the capabilities of the **patient and examiner**
- The future: further **refinement and validation** of patient performed examination maneuvers



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Thank You!

