



Knee Tendon Injury

Clinical Guidelines for Medical Necessity Review

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Important Notices

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Guideline Information:

Specialty Area: Diseases & Disorders of the Musculoskeletal System (M00-M99)

CarePath Group: Knee

CarePath Name: Knee Tendon Tear

Type: Adult (18+ yo) | Pediatric (0-17yo)

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Table of Contents

Important Notices	2
Care Path Clinical Discussion	6
Key Information	6
Definitions	7
Care Path Diagnostic Criteria	9
Disease Classification	9
ICD-10 Codes Associated with Classification	9
Presentation and Etiology	14
Causes and Risk Factors	14
Clinical Presentation	14
Typical Physical Exam Findings	15
Typical Diagnostic Findings	15
Care Path Services & Medical Necessity Criteria	16
Conservative Therapy	16
Service: Physical Therapy	16
General Guidelines	16
Medical Necessity Criteria	16
Indications	16
Site of Service Criteria	17
Procedure Codes (HCPCS/CPT)	17
Service: Orthotics	24
General Guidelines	24
Medical Necessity Criteria	24
Indications	24
Non-Indications	24
Site of Service Criteria	24
Procedure Codes (HCPCS/CPT)	24
Advanced Imaging	26
Service: Magnetic Resonance Imaging (MRI) without Contrast	26
General Guidelines	26
Medical Necessity Criteria	26
Indications	26
Non-Indications	27
Site of Service Criteria	27
Procedure Codes (HCPCS/CPT)	27

Service: Ultrasound (US)	28
General Guidelines	28
Medical Necessity Criteria	28
Indications	28
Non-Indications	28
Site of Service Criteria	28
Procedure Codes (HCPCS/CPT)	29
Surgical Management	30
Service: Patellar Tendon Repair	30
General Guidelines	30
Medical Necessity Criteria	30
Indications	30
Non-Indications	30
Site of Service Criteria	30
Procedure Codes (HCPCS/CPT)	30
Service: Quadriceps Tendon Repair	31
General Guidelines	31
Medical Necessity Criteria	31
Indications	31
Non-Indications	31
Site of Service Criteria	31
Procedure Codes (HCPCS/CPT)	31
Surgical Risk Factors	32
Postoperative Care	36
Service: Physical Therapy	36
General Guidelines	36
Medical Necessity Criteria	36
Indications	36
Non-Indications	36
Site of Service Criteria	36
Procedure Codes (HCPCS/CPT)	36
Service: Home Health Care	43
General Guidelines	43
Medical Necessity Criteria	43
Indications	43
Non-Indications	43
Site of Service Criteria	43

Procedure Codes (HCPCS/CPT)	43
Service: Orthotics	44
General Guidelines	44
Medical Necessity Criteria	44
Indications	44
Non-Indications	44
Site of Service Criteria	44
Procedure Codes (HCPCS/CPT)	44
References	45
Clinical Guideline Revision History/Information	46

Care Path Clinical Discussion

The extensor mechanism of the knee consists of the patella, patellar tendon, and quadriceps tendon.¹ The most common injury to the extensor mechanism is a patellar fracture. Patella fractures are much more common than tendon ruptures by more than double. However, tendon tears and complete ruptures are possible.² Extensor tendon tears are relatively rare.¹ Quadriceps tendon ruptures are more common than patellar tendon ruptures, especially in individuals over 40 years of age. In the United States, quadriceps tendon ruptures affect 1.3% of the population each year. In contrast, patellar tendon ruptures tend to affect less than 0.5% of the population each year. Males are more commonly affected than females. The typical presentation is acute onset of pain with a tearing sensation, subjective swelling, and inability to bear weight or extend the knee following a fall or sports-related injury.^{1,2}

Clinicians frequently diagnose tendon tears or ruptures after a thorough history and physical. Imaging may be a useful adjunct. Radiography is the first indicated imaging modality; advanced imaging such as magnetic resonance imaging (MRI) or ultrasound (US) can help confirm the diagnosis. Advanced imaging can also help assess the location or degree of the tear but is not always necessary.^{1,2}

Complete tears and ruptures should be surgically repaired early. Delayed repairs have poorer outcomes, and repairs of chronic tears are technically challenging.^{1,2} Non-operative management of incomplete tears is appropriate if the extensor mechanism is intact.^{1,2}

The information contained herein gives a general overview of the pathway of this specific diagnosis, beginning with initial presentation, recommended assessments, and treatment options as supported by the medical literature and existing guidelines. It should be noted that the care of patients can be complex. The information below is meant to support clinical decision making in adult patients. It is not necessarily applicable to every case, as the entire clinical picture (including comorbidities, history, etc.) should be considered.

Key Information

- Patients with a patellar or quadriceps tendon tear may present with symptoms to their primary care physician before seeing a sports medicine physician or orthopedic surgeon. They may also present to an urgent or emergency care center after an injury.
- Epidemiological data on patellar and quadriceps tendon tears are lacking. Quadriceps tendon tears are relatively rare.¹
- Physical exams are the first line of diagnosis. Repair complete tears or ruptures early to avoid poor outcomes caused by delay.^{1,2}

Definitions

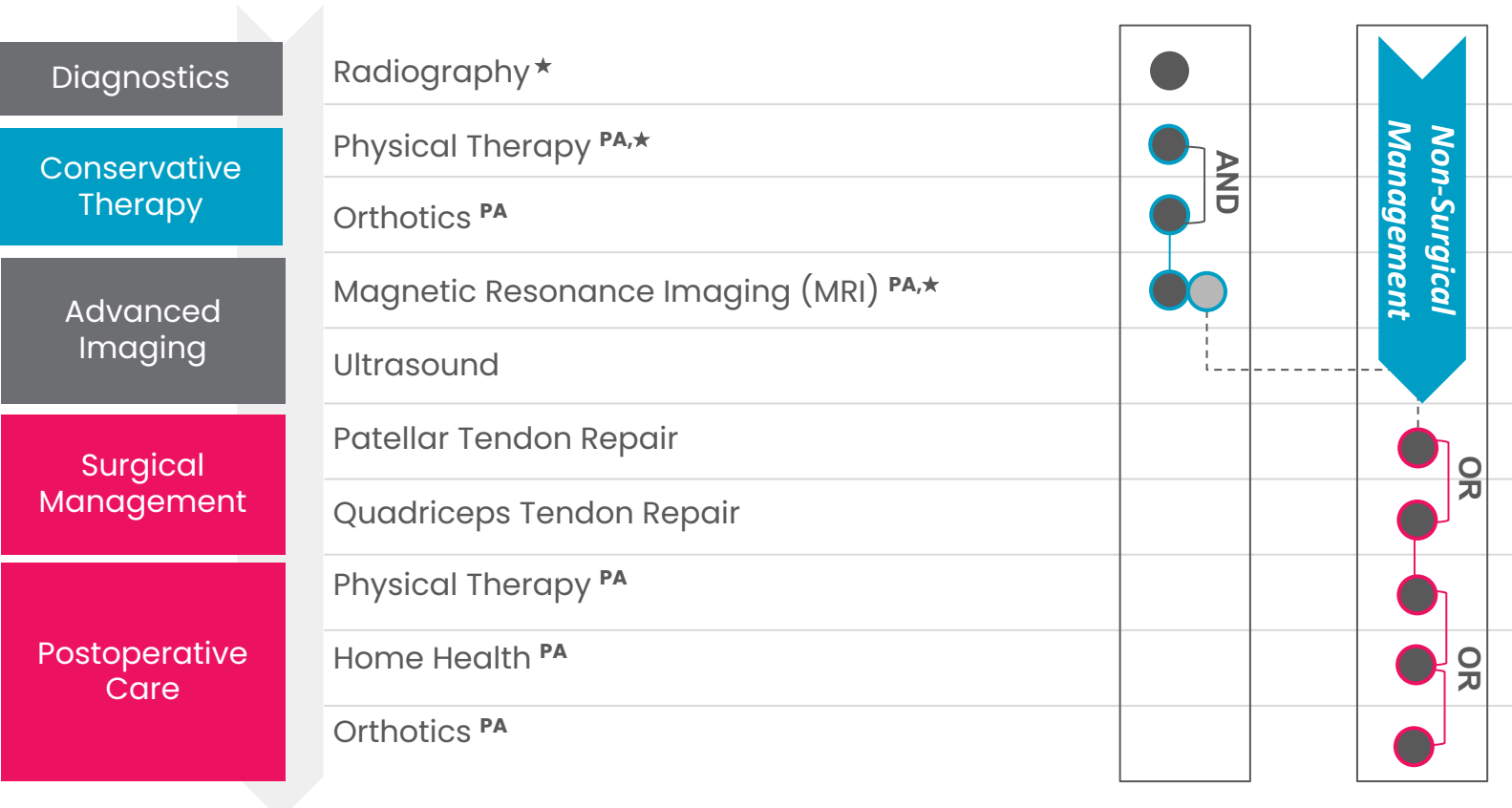
Knee Tendon Injuries: Most knee tendon injuries involve the quadriceps or patellar tendon. The quadriceps tendon is attached to the superior pole of the patella (kneecap), and the patellar tendon is attached to the inferior pole of the patella and the tibial tubercle. Disrupting these tendons leaves patients unable to extend the knee. This often results from trauma. Spontaneous tendon disruptions are less common. These injuries require surgical treatment if complete. Some incomplete injuries can be treated non-surgically.

Knee Tendon Injury

What is a "Cohere Care Path"?

These Care Paths organize the services typically considered most clinically optimal and likely to be automatically approved. These service recommendations also include the suggested sequencing and quantity or frequency determined clinically appropriate and medically necessary for the management of most patient care scenarios in this Care Path's diagnostic cohort.

Non-Surgical Management **Surgical Management**



Key

- ^{PA} = Service may require prior authorization
- [★] = Denotes preferred service
- AND = Services completed concurrently
- OR = Services generally mutually exclusive
- = Non-surgical management prior authorization group of services
- = Surgical management prior authorization group of services
- = Subsequent service
- = Management path moves to a different management path

Care Path Diagnostic Criteria

Disease Classification

Knee Tendon Injury

ICD-10 Codes Associated with Classification

ICD-10 Code	Code Description/Definition
M25.561	Pain in right knee
M25.562	Pain in left knee
M25.569	Pain in unspecified knee
M62.151	Other rupture of muscle (nontraumatic), right thigh
M62.152	Other rupture of muscle (nontraumatic), left thigh
M62.159	Other rupture of muscle (nontraumatic), unspecified thigh
M62.161	Other rupture of muscle (nontraumatic), right lower leg
M62.162	Other rupture of muscle (nontraumatic), left lower leg
M62.169	Other rupture of muscle (nontraumatic), unspecified lower leg
M66.251	Spontaneous rupture of extensor tendons, right thigh
M66.252	Spontaneous rupture of extensor tendons, left thigh
M66.259	Spontaneous rupture of extensor tendons, unspecified thigh
M66.261	Spontaneous rupture of extensor tendons, right lower leg
M66.262	Spontaneous rupture of extensor tendons, left lower leg
M66.269	Spontaneous rupture of extensor tendons, unspecified lower leg
M66.851	Spontaneous rupture of other tendons, right thigh
M66.852	Spontaneous rupture of other tendons, left thigh
M66.859	Spontaneous rupture of other tendons, unspecified thigh
M66.861	Spontaneous rupture of other tendons, right lower leg
M66.862	Spontaneous rupture of other tendons, left lower leg

M66.869	Spontaneous rupture of other tendons, unspecified lower leg
M79.661	Pain in right lower leg
M79.662	Pain in left lower leg
M79.669	Pain in unspecified lower leg
S76.1	Injury of quadriceps muscle, fascia and tendon
S76.10	Unspecified injury of quadriceps muscle, fascia and tendon
S76.101	Unspecified injury of right quadriceps muscle, fascia and tendon
S76.102	Unspecified injury of left quadriceps muscle, fascia and tendon
S76.109	Unspecified injury of unspecified quadriceps muscle, fascia and tendon
S76.11	Strain of quadriceps muscle, fascia and tendon
S76.111	Strain of right quadriceps muscle, fascia and tendon
S76.112	Strain of left quadriceps muscle, fascia and tendon
S76.119	Strain of unspecified quadriceps muscle, fascia and tendon
S76.12	Laceration of quadriceps muscle, fascia and tendon
S76.121	Laceration of right quadriceps muscle, fascia and tendon
S76.122	Laceration of left quadriceps muscle, fascia and tendon
S76.129	Laceration of unspecified quadriceps muscle, fascia and tendon
S76.19	Other specified injury of quadriceps muscle, fascia and tendon
S76.191	Other specified injury of right quadriceps muscle, fascia and tendon
S76.192	Other specified injury of left quadriceps muscle, fascia and tendon
S76.199	Other specified injury of unspecified quadriceps muscle, fascia and tendon
S86.2	Injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level

S86.20	Unspecified injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level
S86.201	Unspecified injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level, right leg
S86.202	Unspecified injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level, left leg
S86.209	Unspecified injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level, unspecified leg
S86.21	Strain of muscle(s) and tendon(s) of anterior muscle group at lower leg level
S86.211	Strain of muscle(s) and tendon(s) of anterior muscle group at lower leg level, right leg
S86.212	Strain of muscle(s) and tendon(s) of anterior muscle group at lower leg level, left leg
S86.219	Strain of muscle(s) and tendon(s) of anterior muscle group at lower leg level, unspecified leg
S86.22	Laceration of muscle(s) and tendon(s) of anterior muscle group at lower leg level
S86.221	Laceration of muscle(s) and tendon(s) of anterior muscle group at lower leg level, right leg
S86.222	Laceration of muscle(s) and tendon(s) of anterior muscle group at lower leg level, left leg
S86.229	Laceration of muscle(s) and tendon(s) of anterior muscle group at lower leg level, unspecified leg
S86.29	Other injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level
S86.291	Other injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level, right leg
S86.292	Other injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level, left leg
S86.299	Other injury of muscle(s) and tendon(s) of anterior muscle group at lower leg level, unspecified leg
S86.8	Injury of other muscles and tendons at lower leg level

S86.80	Unspecified injury of other muscles and tendons at lower leg level
S86.801	Unspecified injury of other muscle(s) and tendon(s) at lower leg level, right leg
S86.802	Unspecified injury of other muscle(s) and tendon(s) at lower leg level, left leg
S86.809	Unspecified injury of other muscle(s) and tendon(s) at lower leg level, unspecified leg
S86.81	Strain of other muscles and tendons at lower leg level
S86.811	Strain of other muscle(s) and tendon(s) at lower leg level, right leg
S86.812	Strain of other muscle(s) and tendon(s) at lower leg level, left leg
S86.819	Strain of other muscle(s) and tendon(s) at lower leg level, unspecified leg
S86.82	Laceration of other muscles and tendons at lower leg level
S86.821	Laceration of other muscle(s) and tendon(s) at lower leg level, right leg
S86.822	Laceration of other muscle(s) and tendon(s) at lower leg level, left leg
S86.829	Laceration of other muscle(s) and tendon(s) at lower leg level, unspecified leg
S86.89	Other injury of other muscles and tendons at lower leg level
S86.891	Other injury of other muscle(s) and tendon(s) at lower leg level, right leg
S86.892	Other injury of other muscle(s) and tendon(s) at lower leg level, left leg
S86.899	Other injury of other muscle(s) and tendon(s) at lower leg level, unspecified leg
S86.9	Injury of unspecified muscle and tendon at lower leg level
S86.90	Unspecified injury of unspecified muscle and tendon at lower leg level

S86.901	Unspecified injury of unspecified muscle(s) and tendon(s) at lower leg level, right leg
S86.902	Unspecified injury of unspecified muscle(s) and tendon(s) at lower leg level, left leg
S86.909	Unspecified injury of unspecified muscle(s) and tendon(s) at lower leg level, unspecified leg
S86.91	Strain of unspecified muscle and tendon at lower leg level
S86.911	Strain of unspecified muscle(s) and tendon(s) at lower leg level, right leg
S86.912	Strain of unspecified muscle(s) and tendon(s) at lower leg level, left leg
S86.919	Strain of unspecified muscle(s) and tendon(s) at lower leg level, unspecified leg
S86.92	Laceration of unspecified muscle and tendon at lower leg level
S86.921	Laceration of unspecified muscle(s) and tendon(s) at lower leg level, right leg
S86.922	Laceration of unspecified muscle(s) and tendon(s) at lower leg level, left leg
S86.929	Laceration of unspecified muscle(s) and tendon(s) at lower leg level, unspecified leg
S86.99	Other injury of unspecified muscle and tendon at lower leg level
S86.991	Other injury of unspecified muscle(s) and tendon(s) at lower leg level, right leg
S86.992	Other injury of unspecified muscle(s) and tendon(s) at lower leg level, left leg
S86.999	Other injury of unspecified muscle(s) and tendon(s) at lower leg level, unspecified leg

Presentation and Etiology

Causes and Risk Factors

Patellar or quadriceps tendon tears can be caused in athletics by a forceful, sudden contraction of the quadriceps muscle from a jump and landing or an abrupt change in direction. Other causes include indirect trauma (e.g., falls) and injuries secondary to underlying systemic disease. Patellar tendon tears may occur with sudden or forced knee flexion and eccentric quad contraction with the knee already flexed. This movement can cause the tendon to tear or avulse from the distal patellar pole. A common mechanism of quadriceps tendon injury is a backward fall or force with the foot fixed and knee flexed, causing the tendon to tear or avulse from the proximal patella.^{1,2}

Quadricep tendon ruptures are more common than patellar tendon ruptures. Both are more common in men than women. Patellar tendon ruptures are more likely to occur as a result of sporting injuries under the age of 40 years, whereas quadriceps tendon ruptures are more common in those over 40 with medical risk factors (below).^{1,2,3}

Risk factors for quadriceps and tendon injuries include:

- Previous quadriceps or hamstring injury
- Anabolic steroid use
- Fluoroquinolone use
- Glucocorticoid use
- Diabetes mellitus
- Rheumatoid arthritis
- Hyperparathyroidism
- Chronic renal failure
- Polyneuropathy

Clinical Presentation

Extensor tendon tear almost always presents with acute onset. History includes:

- Pain
- Feeling a sudden pop
- Swelling
- Inability to bear weight

- Inability to extend the knee

Typical Physical Exam Findings

Patellar tendon findings ^{1,2}

- Infrapatellar swelling with or without ecchymosis
- Focal tenderness at the distal patellar pole or through the substance of the tendon
- Palpable tendon defect
- Painful, weak extension (partial tear)
- Absent extension (rupture)
- Difficulty or inability to maintain straight leg raise against gravity

Quadriceps tendon findings ^{1,2}

- Suprapatellar swelling with or without ecchymosis
- Focal tenderness at the proximal patellar pole or through the substance of the tendon
- Palpable tendon defect
- Painful, weak extension (partial tear)
- Absent extension (rupture)
- Difficulty or inability to maintain straight leg raise against gravity

Typical Diagnostic Findings

- The patella is superiorly displaced on a lateral radiograph (patellar tendon tear).
- The patella is inferiorly displaced on a lateral radiograph (quadriceps tendon tear).
- Avulsion fracture of the superior or inferior patellar poles
- Avulsion fracture of the tibial tubercle

Care Path Services & Medical Necessity Criteria

Conservative Therapy

Service: Physical Therapy

General Guidelines

- **Units, Frequency, & Duration:** There is insufficient evidence to support recommendations for units, frequency, and duration.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:**¹
 - If extensor mechanism function is intact, nonsurgical management is appropriate.
 - Weight-bearing and range of motion (ROM) may be restricted initially (up to 6 weeks for quad, 2-3 weeks for patellar tears). Education, pain management, and effusion may be warranted in this period, followed by progressive ROM.
 - Strengthening to commence no sooner than 6 weeks
 - Physical therapy should continue until the patient functionally returns to their baseline or to sports.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **Physical therapy** is considered appropriate if **ALL** of the following are **TRUE**:
 - The patient has **ANY** positive findings from the [presentation](#) list:
 - Pain
 - Feeling a sudden pop
 - Swelling
 - Inability to bear weight
 - The patient has **ANY** positive findings from the [exam findings](#) list:
 - Infrapatellar swelling with or without ecchymosis
 - Suprapatellar swelling with or without ecchymosis
 - Focal tenderness at the distal patellar pole or through the substance of the tendon
 - Painful, weak extension (partial tear)

- Difficulty or inability to maintain a straight leg raise against gravity

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
97010	Application of hot or cold packs
97012	Application of mechanical traction
97014	Application of electrical stimulation
97016	Application of vasopneumatic devices
97018	Application of paraffin bath
97022	Application of whirlpool
97024	Application of diathermy
97026	Application of infrared modality
97028	Application of ultraviolet modality
97032	Application of manual electrical stimulation
97033	Application of iontophoresis
97034	Application of contrast baths
97035	Application of ultrasound modality
97036	Application of Hubbard tank
97039	Modality service
97110*	Therapeutic exercises to develop strength and endurance, range of motion and flexibility
97112	Neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and

	proprioception for sitting and standing activities
97113	Aquatic therapy with therapeutic exercises
97116	Gait training including stair climbing
97124	Massage including effleurage and petrissage; Massage including effleurage and tapotement; Massage including effleurage, petrissage and tapotement; Massage including petrissage and tapotement
97139	Therapeutic procedure
97140	Manual therapy techniques
97150	Group therapeutic procedures
97164	Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient 20 minutes; Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient and family 20 minutes; Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient's family 20 minutes
97530	Direct therapeutic activities with use of dynamic activities to improve functional performance, each 15 minutes
97535	Home management training, direct one-on-one contact, each 15 minutes; Self-care management training, direct one-on-one contact, each 15 minutes
97537	Community reintegration training, direct one-on-one contact, each 15 minutes; Work reintegration training, direct one-on-one contact, each 15 minutes
97542	Wheelchair management, each 15 minutes
97545	Work conditioning, initial 2 hours; Work hardening, initial 2 hours
97546	Work conditioning, each additional hour; Work hardening, each additional hour

97750	Physical performance measurement with written report, each 15 minutes; Physical performance test with written report, each 15 minutes
97755	Assistive technology assessment with written report, direct one-on-one contact, each 15 minutes
97760	Initial orthotic management and training with assessment and fitting of lower extremities and trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremities, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremity and trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremity, each 15 minutes; Initial orthotic management and training with assessment and fitting of trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of upper and lower extremities and trunk, each 15 minutes
97761	Initial prosthetic training of lower extremities, each 15 minutes; Initial prosthetic training of lower extremity, each 15 minutes Initial prosthetic training of upper and lower extremities, each 15 minutes; Initial prosthetic training of upper extremities, each 15 minutes; Initial prosthetic training of upper extremity, each 15 minutes
97763	Subsequent orthotic management and training of lower extremities and trunk, each 15 minutes Subsequent orthotic management and training of lower extremity and trunk, each 15 minutes Subsequent orthotic management and training of lower extremity, each 15 minutes Subsequent orthotic management and training of upper and lower extremities and trunk, each 15 minutes Subsequent orthotic management and training of upper extremities and trunk, each 15 minutes Subsequent orthotic management and training of upper

	<p>extremities, each 15 minutes</p> <p>Subsequent orthotic management and training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic management and training of upper extremity, each 15 minutes</p> <p>Subsequent orthotic management of lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management of lower extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic management of lower extremity, each 15 minutes</p> <p>Subsequent orthotic management of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management of upper extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management of upper extremities, each 15 minutes</p> <p>Subsequent orthotic management of upper extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic management of upper extremity, each 15 minutes</p> <p>Subsequent orthotic training of lower extremity, each 15 minutes</p> <p>Subsequent orthotic training of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic training of upper extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic training of upper extremities, each 15 minutes</p> <p>Subsequent orthotic training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic training of upper extremity, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower</p>
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	<p>extremity, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremities, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremity, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremity, each 15 minutes</p> <p>Subsequent prosthetic management of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremities, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremity, each 15 minutes</p> <p>Subsequent prosthetic training of lower extremity, each 15 minutes</p> <p>Subsequent prosthetic training of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremities, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremity, each 15</p>
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	<p>minutes</p> <p>Subsequent orthotic management and training of lower extremities, each 15 minutes</p> <p>Subsequent orthotic management of lower extremities, each 15 minutes</p> <p>Subsequent orthotic training of lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic training of lower extremities, each 15 minutes</p> <p>Subsequent orthotic training of lower extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower extremities, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremities, each 15 minutes</p> <p>Subsequent prosthetic training of lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of lower extremities, each 15 minutes</p> <p>Subsequent prosthetic training of lower extremity and trunk, each 15 minutes</p>
97799	Unlisted physical medicine/rehabilitation service or procedure
420	Physical Therapy
421	Physical Therapy: Visit Charge
422	Physical Therapy: Hourly Charge
423	Physical Therapy: Group Rate
424	Physical Therapy: Evaluation/Re-evaluation
429	Physical Therapy: Other Physical Therapy
97163	Evaluation of physical therapy, typically 45 minutes
97161	Evaluation of physical therapy, typically 20 minutes
97162	Evaluation of physical therapy, typically 30 minutes
97168	Re-evaluation of occupational therapy established plan of care, typically 30 minutes
97165	Evaluation of occupational therapy, typically 30 minutes

97166	Evaluation of occupational therapy, typically 45 minutes
97167	Evaluation of occupational therapy established plan of care, typically 60 minutes
G0151	Hhcp-serv of pt,ea 15 min

*Default codes for suggested services

Service: Orthotics

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:** Knee orthotics are appropriate for incomplete knee tendon injuries and after knee tendon repair surgery.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **Orthotics** are considered appropriate if **ALL** of the following are **TRUE⁴**:
 - The patient has **ANY** positive findings from the [presentation](#) list:
 - Pain
 - Feeling a sudden pop
 - Swelling
 - Inability to bear weight
 - The patient has **ANY** positive findings from the [exam findings](#) list:
 - Infrapatellar swelling with or without ecchymosis
 - Suprapatellar swelling with or without ecchymosis
 - Focal tenderness at the distal patellar pole or through the substance of the tendon
 - Painful, weak extension (partial tear)
 - Difficulty or inability to maintain a straight leg raise against gravity
- OR**
- The patient underwent knee tendon repair surgery.

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
L1845	Knee Orthosis Single Upright Thigh & Calf Prefab

L1846	Knee Orthosis Double Upright Thigh & Calf Custom
L1852	Knee Orthosis double upright prefab ots
L3913	Hfo w/o joints cf

Advanced Imaging

Service: Magnetic Resonance Imaging (MRI) without Contrast

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:**
 - Radiography is the preferred method of initial imaging.
 - MRI is indicated^{1,2}:
 - For surgical planning or confirmation of patellar or quadriceps tendon tear if not clinically apparent.^{5,6}
 - If radiography reveals:
 - Patellar avulsion fracture
 - The patella is superiorly displaced on a lateral radiograph (patellar tendon tear)
 - The patella is inferiorly displaced on a lateral radiograph (quadriceps tendon tear)
 - To assess for associated intra-articular injuries.⁷
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **MRI** is considered appropriate if **ALL** of the following are **TRUE**^{1,4-6}:
 - The patient has **ANY** positive findings from the [presentation](#) list:
 - Pain
 - Feeling a sudden pop
 - Swelling
 - Inability to bear weight
 - The patient has **ANY** positive findings from the [exam findings](#) list:
 - Infrapatellar swelling with or without ecchymosis
 - Suprapatellar swelling with or without ecchymosis
 - Focal tenderness at the distal patellar pole or through the substance of the tendon
 - Painful, weak extension (partial tear)
 - Absent extension (rupture)
 - Difficulty or inability to maintain straight leg raise against gravity

- The radiograph shows **ANY** of the following evidence of a knee tendon tear:
 - The patella is superiorly displaced on a lateral radiograph (patellar tendon tear).
 - The patella is inferiorly displaced on a lateral radiograph (quadriceps tendon tear).
 - Avulsion fracture of the superior or inferior patellar poles
 - Avulsion fracture of the tibial tubercle
 - Suspicion of tendon tear

Non-Indications

- **MRI** may not be medically appropriate if **ANY** of the following is **TRUE**:
 - Non-compatible implanted devices
 - Metallic intraocular foreign bodies
 - Claustrophobia

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
73721	MRI of lower extremity
73722	MRI scan of leg joint with contrast
73723	MRI scan of leg joint before and after contrast

Service: Ultrasound (US)

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:**
 - US may be appropriate for serial assessments of healing.⁸⁻¹⁰
- **Recommended Clinical Approach**^{1,8-10}:
 - US is user-dependent and should only be applied by experienced individuals.
 - US may be appropriate at the bedside to:
 - Confirm a tendon tear or rupture diagnosis.
 - Assess the degree and location of a tear.
- **Exclusions:**
 - Suspicion of associated intra-articular injuries

Medical Necessity Criteria

Indications

- **Ultrasound** is considered appropriate IF **ALL** of the following are **TRUE**:
 - The patient has **ANY** positive findings from the [presentation](#) list:
 - Pain
 - Feeling a sudden pop
 - Swelling
 - Inability to bear weight
 - The patient has **ANY** positive findings from the [exam findings](#) list:
 - Infrapatellar swelling with or without ecchymosis
 - Suprapatellar swelling with or without ecchymosis
 - Focal tenderness at the distal patellar pole or through the substance of the tendon
 - Palpable tendon defect
 - Painful, weak extension (partial tear)
 - Absent extension (rupture)
 - Difficulty or inability to maintain straight leg raise against gravity

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
76881	Ultrasound, extremity, nonvascular, real-time with image documentation; complete
76882	Ultrasound, extremity, nonvascular, real-time with image documentation; limited, anatomic specific

Surgical Management

Service: Patellar Tendon Repair

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach^{1,2}:**
 - Acute repair is indicated once a diagnosis is established.
 - Repair via through-transosseous tunnel suturing or suture anchors for proximal tear. Repair via end-to-end if the tear is mid-substance.
 - Augmentation with wire or tendon autograft is not routinely necessary. It may be indicated for tenuous repairs or retracted or neglected tendons.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **Patellar tendon repair** is considered appropriate if **ANY** of the following is **TRUE¹**:
 - Complete patellar tendon tear.
 - The patient is unable to extend the knee actively.
 - The patient has significant weakness in knee extension.**AND**
 - Imaging supports the diagnosis of extensor mechanism injury.

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
27380	Suture of tendon below knee, primary
27381	Suture of tendon below knee, secondary reconstruction

Service: Quadriceps Tendon Repair

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach^{1,2}:**
 - Acute repair is indicated once a diagnosis is established.
 - Repair via through-transosseous tunnel suturing or suture anchors for proximal tear. Repair via end-to-end if the tear is mid-substance.
 - Augmentation with wire or tendon autograft or allograft is not routinely necessary. It may be indicated for tenuous repairs or failed repairs.
 - Quadriceps tendon flap reconstruction may be indicated for retracted or chronic (greater than 6 week) tears.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **Quadriceps tendon repair** is considered appropriate if **ANY** of the following is **TRUE⁴**:
 - Complete quadriceps tendon tear.
 - The patient is unable to extend the knee actively.
 - The patient has significant weakness in knee extension.**AND**
 - Imaging supports the diagnosis of extensor mechanism injury.

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
27385	Suture of ruptured muscle of thigh, primary
27386	Suture of ruptured muscle of thigh, secondary

Surgical Risk Factors

Patient Medical Risk Stratification

Patient Risk Score	Patient Characteristic	Min Range	Max Range	Guidance
1- Very Low Risk	No known medical problems			
2- Low Risk	Hypertension		180/110 mm Hg	
2- Low Risk	Asthma	peak flow >80% of predicted or personal best value		
2- Low Risk	Prior history of alcohol abuse			Screen for liver disease and malnutrition
2- Low Risk	Prior history of tobacco use			
3- Intermediate Risk	Asthma	peak flow <80% of predicted or personal best value		
3- Intermediate Risk	Active alcohol abuse			
3- Intermediate Risk	Age	65	75	
3- Intermediate Risk	History of treated, stable coronary artery disease (CAD)			
3- Intermediate Risk	Stable atrial fibrillation			
3- Intermediate Risk	Diabetes mellitus	HbA1C >7%		
3- Intermediate Risk	Morbid obesity	BMI 30	BMI 40	
3- Intermediate Risk	Anemia	hemoglobin <11 (females), <12 (males)		Workup to identify etiology
3- Intermediate Risk	HIV	CD4 <200 cells/mm3		Get clearance from HIV specialist

3- Intermediate Risk	Rheumatologic disease			Preoperative consultation with rheumatologist re: perioperative medication management
3- Intermediate Risk	Peripheral vascular disease or history of peripheral vascular bypass	ankle-brachial pressure index (ABPI) <0.9		Preoperative consultation with vascular surgeon
3- Intermediate Risk	History of venous thromboembolism (VTE)			
3- Intermediate Risk	Well-controlled obstructive sleep apnea			
3- Intermediate Risk	Malnutrition	transferrin <200 mg/dL albumin <3.5 g/dL prealbumin <22.5 mg/dL total lymphocyte count <1200-1500 cell/mm ³ BMI <18		Preoperative consultation with nutritionist
3- Intermediate Risk	Active tobacco Use			Enroll patient in smoking cessation program
4- High Risk	Diabetes mellitus with complications	HbA1c >8%		
4- High Risk	Age	76	85	
4- High Risk	Oxygen dependent pulmonary disease			
4- High Risk	Sickle cell anemia			
4- High Risk	Obesity	BMI 40		
4- High Risk	Cirrhosis, history of hepatic decompensation or variceal bleeding			

4- High Risk	Impaired cognition; dementia			
4- High Risk	Compensated CHF			
4- High Risk	Cerebrovascular disease			
4- High Risk	Uncontrolled or suspected obstructive sleep apnea (OSA)			
4- High Risk	Renal insufficiency	serum creatinine >1.5 mg/dL or creatinine clearance <100 mL/min		
4- High Risk	Opioid dependence			
4- High Risk	End Stage Liver Disease			
4- High Risk	Uncontrolled Seizure Disorder			
4- High Risk	History of Malignant Hyperthermia			
5- Very High Risk	Cardiovascular: unstable angina, recent myocardial infarction (60 days), uncontrolled atrial fibrillation or other high-grade abnormal rhythm, severe valvular disease, decompensated heart failure			
5- Very High Risk	Primary pulmonary hypertension			Preoperative consultation with pulmonologist warranted
5- Very High Risk	Cirrhosis or severe liver disease, history of hepatic decompensation or variceal bleeding			
5- Very High Risk	Severe frailty, dependence for ADLs, or history of 3 or more falls in last 6 mos			
5- Very High Risk	Obesity		BMI >50	
5- Very High Risk	Age		>85	

5- Very High Risk	History of VTE with CI to anticoagulation, failure of anticoagulation, cessation of anticoagulation therapy secondary to bleeding			Preoperative consultation with hematologist or internist
5- Very High Risk	Renal failure requiring dialysis			
5- Very High Risk	Immunosuppression			
5- Very High Risk	Chronic Pain			

Postoperative Care

Service: Physical Therapy

General Guidelines

- **Units, Frequency, & Duration²:**
 - Initial physical therapy may be for gait training with assistive devices, swelling management, or pain reduction.
 - ROM and strengthening begin 6 weeks postoperatively.
- **Criteria for Subsequent Requests:** The patient has not met all physical therapy goals.
- **Recommended Clinical Approach^{1,2}:**
 - Weight-bearing and ROM may be restricted immediately following surgery. Crutches or knee braces may be applicable.
 - Postoperative rehabilitation should begin immediately and progress according to functional gains.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **Physical therapy** is considered appropriate if **ANY** of the following is **TRUE**:
 - The patient underwent corrective knee tendon repair surgery.

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
97010	Application of hot or cold packs
97012	Application of mechanical traction
97014	Application of electrical stimulation
97016	Application of vasopneumatic devices

97018	Application of paraffin bath
97022	Application of whirlpool
97024	Application of diathermy
97026	Application of infrared modality
97028	Application of ultraviolet modality
97032	Application of manual electrical stimulation
97033	Application of iontophoresis
97034	Application of contrast baths
97035	Application of ultrasound modality
97036	Application of Hubbard tank
97039	Modality service
97110*	Therapeutic exercises to develop strength and endurance, range of motion and flexibility
97112	Neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and proprioception for sitting and standing activities
97113	Aquatic therapy with therapeutic exercises
97116	Gait training including stair climbing
97124	Massage including effleurage and petrissage; Massage including effleurage and tapotement; Massage including effleurage, petrissage and tapotement; Massage including petrissage and tapotement
97139	Therapeutic procedure
97140	Manual therapy techniques
97150	Group therapeutic procedures
97164	Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient 20 minutes; Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient and family 20

	minutes; Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient's family 20 minutes
97530	Direct therapeutic activities with use of dynamic activities to improve functional performance, each 15 minutes
97535	Home management training, direct one-on-one contact, each 15 minutes; Self-care management training, direct one-on-one contact, each 15 minutes
97537	Community reintegration training, direct one-on-one contact, each 15 minutes; Work reintegration training, direct one-on-one contact, each 15 minutes
97542	Wheelchair management, each 15 minutes
97545	Work conditioning, initial 2 hours; Work hardening, initial 2 hours
97546	Work conditioning, each additional hour; Work hardening, each additional hour
97750	Physical performance measurement with written report, each 15 minutes; Physical performance test with written report, each 15 minutes
97755	Assistive technology assessment with written report, direct one-on-one contact, each 15 minutes
97760	Initial orthotic management and training with assessment and fitting of lower extremities and trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremities, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremity and trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremity, each 15 minutes; Initial orthotic management and training with assessment and fitting of trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of upper and lower extremities and trunk, each 15 minutes

97761	<p>Initial prosthetic training of lower extremities, each 15 minutes;</p> <p>Initial prosthetic training of lower extremity, each 15 minutes</p> <p>Initial prosthetic training of upper and lower extremities, each 15 minutes;</p> <p>Initial prosthetic training of upper extremities, each 15 minutes;</p> <p>Initial prosthetic training of upper extremity, each 15 minutes</p>
97763	<p>Subsequent orthotic management and training of lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management and training of lower extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic management and training of lower extremity, each 15 minutes</p> <p>Subsequent orthotic management and training of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management and training of upper extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management and training of upper extremities, each 15 minutes</p> <p>Subsequent orthotic management and training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic management and training of upper extremity, each 15 minutes</p> <p>Subsequent orthotic management of lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management of lower extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic management of lower extremity, each 15 minutes</p> <p>Subsequent orthotic management of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management of upper extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic management of upper extremities, each 15 minutes</p> <p>Subsequent orthotic management of upper extremity and</p>

	<p>trunk, each 15 minutes</p> <p>Subsequent orthotic management of upper extremity, each 15 minutes</p> <p>Subsequent orthotic training of lower extremity, each 15 minutes</p> <p>Subsequent orthotic training of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic training of upper extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic training of upper extremities, each 15 minutes</p> <p>Subsequent orthotic training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent orthotic training of upper extremity, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower extremity, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremities, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of upper extremity, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremity, each 15 minutes</p> <p>Subsequent prosthetic management of upper and lower</p>
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	<p>extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremities, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management of upper extremity, each 15 minutes</p> <p>Subsequent prosthetic training of lower extremity, each 15 minutes</p> <p>Subsequent prosthetic training of upper and lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremities, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of upper extremity, each 15 minutes</p> <p>Subsequent orthotic management and training of lower extremities, each 15 minutes</p> <p>Subsequent orthotic management of lower extremities, each 15 minutes</p> <p>Subsequent orthotic training of lower extremities and trunk, each 15 minutes</p> <p>Subsequent orthotic training of lower extremities, each 15 minutes</p> <p>Subsequent orthotic training of lower extremity and trunk, each 15 minutes</p> <p>Subsequent prosthetic management and training of lower extremities, each 15 minutes</p> <p>Subsequent prosthetic management of lower extremities, each 15 minutes</p> <p>Subsequent prosthetic training of lower extremities and trunk, each 15 minutes</p> <p>Subsequent prosthetic training of lower extremities, each 15</p>
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	minutes Subsequent prosthetic training of lower extremity and trunk, each 15 minutes
97799	Unlisted physical medicine/rehabilitation service or procedure
420	Physical Therapy
421	Physical Therapy: Visit Charge
422	Physical Therapy: Hourly Charge
423	Physical Therapy: Group Rate
424	Physical Therapy: Evaluation/Re-evaluation
429	Physical Therapy: Other Physical Therapy
97163	Evaluation of physical therapy, typically 45 minutes
97161	Evaluation of physical therapy, typically 20 minutes
97162	Evaluation of physical therapy, typically 30 minutes
97168	Re-evaluation of occupational therapy established plan of care, typically 30 minutes
97165	Evaluation of occupational therapy, typically 30 minutes
97166	Evaluation of occupational therapy, typically 45 minutes
97167	Evaluation of occupational therapy established plan of care, typically 60 minutes
G0151	Hhcp-serv of pt,ea 15 min

*Default codes for suggested services

Service: Home Health Care

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:** May be recommended for postoperative care if outpatient treatment is not appropriate.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **Home health care** may be appropriate if **ALL** of the following are **TRUE**:
 - The patient lives alone or the patient lives with those that are unable to care for the patient postoperatively.
 - The patient underwent knee tendon repair.

Non-Indications

None.

Site of Service Criteria

Home

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
99509	Home visit for assistance with activities of daily living and personal care
99600	Unlisted home visit procedure; Unlisted home visit service
99334	Level 1 rest home visit for evaluation and management of established patient with minor and/or self-limited problem, including problem-focused interval history and physical examination, and straightforward medical decision-making, typical time with patient, family, and/or caregiver 15 minutes
G0129	Partial hosp prog service
G0283	Elec stim other than wound

Service: Orthotics

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:** Knee orthotics are appropriate for incomplete knee tendon injuries and after knee tendon repair surgery.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

- **Orthotics** are considered appropriate if **ALL** of the following are **TRUE**^{L5}:
 - The patient underwent knee tendon repair surgery.

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
L1845	Knee Orthosis Single Upright Thigh & Calf Prefab
L1846	Knee Orthosis Double Upright Thigh & Calf Custom
L1852	Knee Orthosis double upright prefab ots
L3913	Hfo w/o joints cf
29530	Strapping of knee
L1834	Ko w/0 joint rigid molded to
L1840	Ko derot ant cruciate custom
L1844	Ko w/adj jt rot cntrl molded
L2320	Non-molded lacer
L2330	Lacer molded to patient mode
L2755	Carbon graphite lamination
L2800	Knee cap medial or lateral p
L2861	Torsion mechanism knee/ankle

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Clinical Guideline Revision History/Information

Original Date: September 1, 2020	
Review History	
September 1, 2020 (V.2)	Approving Physician: Dr. Brian Covino
November 15, 2021 (V.3)	Reviewing Physician: Dr. Oladapo M. Babatunde Approving Physician: Dr. Brian Covino
December 29, 2022 (V.4)	Reviewing Physician: Dr. Andrea Young Approving Physician: Dr. Traci Granston