



Medical Policy

Continuous Passive Motion in the Home Setting

Table of Contents

- [Policy: Commercial](#)
- [Description](#)
- [Information Pertaining to All Policies](#)
- [Authorization Information](#)
- [Policy History](#)
- [References](#)
- [Coding Information](#)

Policy Number: 407

BCBSA Reference Number 1.01.10 (For Plan internal use only)

Related Policies

- Autografts and Allografts in the Treatment of Focal Articular Cartilage Lesions, #[111](#)

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity

Use of continuous passive motion in the home setting may be considered **MEDICALLY NECESSARY** as an adjunct to physical therapy in the following situations:

- Under conditions of low postoperative mobility or inability to comply with rehabilitation exercises following a total knee arthroplasty (TKA) or TKA revision. This may include individuals with complex regional pain syndrome (reflex sympathetic dystrophy); extensive arthrofibrosis or tendon fibrosis; or physical, mental, or behavioral inability to participate in active physical therapy.
- During the non-weight-bearing rehabilitation period following articular cartilage repair procedures of the knee (eg, microfracture, osteochondral grafting, autologous chondrocyte implantation, treatment of osteochondritis dissecans, repair of tibial plateau fractures).

Use of continuous passive motion in the home setting for all other conditions is considered **INVESTIGATIONAL**.

Note: CPM is covered as a DME benefit up for to 21 days. Coverage beyond 21 days must be substantiated by medical documentation from the member's treating physician. See [Durable Medical Equipment Payment Policy](#) – page 5.

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for situations where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	Prior authorization is not required .
Commercial PPO and Indemnity	Prior authorization is not required .

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The following codes are included below for informational purposes only; this is not an all-inclusive list.

The above medical necessity criteria MUST be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:

HCPCS Codes

HCPCS codes:	Code Description
E0935	Continuous passive motion exercise device for use on knee only

The following ICD Diagnosis Codes are considered medically necessary when submitted with the HCPCS codes above if medical necessity criteria are met:

ICD-10-CM Diagnosis Coding

ICD-10-CM diagnosis codes:	Code Description
Z48.89	Encounter for other specified surgical aftercare
Z96.651	Presence of right artificial knee joint
Z96.652	Presence of left artificial knee joint
Z96.653	Presence of artificial knee joint, bilateral
Z96.659	Presence of unspecified artificial knee joint

Description

Physical therapy of joints following surgery focuses both on passive motion to restore mobility and on active exercises to restore strength. While passive motion can be administered by a therapist, continuous passive motion devices have also been used. Continuous passive motion is thought to improve recovery by stimulating the healing of articular tissues and the circulation of synovial fluid; reducing local edema; and preventing adhesions, joint stiffness or contractures, or cartilage degeneration.¹ Continuous passive motion has been investigated primarily in the knee, particularly after total knee arthroplasty or ligamentous or cartilage repair. Acceptance of its use in the knee joint has created interest in continuous passive motion use for other weight-bearing joints (ie, hip, ankle, metatarsals) as well as non-weight-bearing joints (ie, shoulder, elbow, metacarpals, interphalangeal joints). Use of continuous passive motion in stroke and burn patients is also being explored.

The device used for the knee moves the joint (eg, flexion and extension) without patient assistance, continuously for extended periods of time (ie, up to 24 hours/day).¹ An electrical power unit is used to set the variable range of motion and speed. The initial settings for range of motion are based on a patient's level of comfort and other factors assessed intraoperatively. The range of motion is increased by 3 to 5 degrees per day, as tolerated. The speed and range of motion can be varied, depending on joint stability. The use of the device may be initiated in the immediate postoperative period and then continued at home for a variable period of time.

Over time, hospital lengths of stay have progressively shortened and, in some cases, surgical repair is done as an outpatient or with a length of stay of 1 to 2 days.² As a result, there has been a considerable shift in the rehabilitation regimen, moving range of motion from an intensive in-hospital program to a less intensive outpatient program. Some providers may want patients to continue continuous passive motion in the home setting as a means of duplicating services offered with a longer (7-day) hospital stay.

The focus of the current review is to examine the literature on the use of continuous passive motion in the home setting as it is currently being prescribed postoperatively. Relevant comparisons are treatment outcomes of continuous passive motion when used alone or with physical therapy, compared with physical therapy alone.

Summary

Description

Continuous passive motion devices are used to keep a joint in motion without patient assistance. Continuous passive motion is being evaluated for treatment and postsurgical rehabilitation of the upper- and lower-limb joints and for a variety of musculoskeletal conditions.

Summary of Evidence

For individuals who have total knee arthroplasty who receive continuous passive motion in the home setting, the evidence includes randomized controlled trials (RCTs), case series, and systematic reviews. Relevant outcomes are symptoms and functional outcomes. Early trials generally used continuous passive motion in the inpatient setting and are less relevant to today's practice patterns of short hospital stays followed by outpatient rehabilitation. Current postoperative rehabilitation protocols differ considerably from when the largest body of evidence was collected, making it difficult to apply available evidence to the present situation. For use of continuous passive motion after total knee arthroplasty, recent studies have suggested that institutional and home use of continuous passive motion has no benefit compared with standard physical therapy (PT). There were no studies evaluating continuous passive motion in patients who could not perform standard PT. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have articular cartilage repair of the knee who receive continuous passive motion in the home setting, the evidence includes nonrandomized studies, case series, and studies with nonclinical outcomes (eg, histology), and systematic reviews of these studies. Relevant outcomes are symptoms and functional outcomes. Systematic reviews of continuous passive motion for this indication have cited studies reporting better histologic outcomes in patients following continuous passive motion. A few studies have reported clinical outcomes but inadequacies of these studies do not permit conclusions on efficacy. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have musculoskeletal conditions other than total knee arthroplasty or knee cartilage repair requiring PT who receive continuous passive motion in the home setting, the evidence includes systematic reviews and/or RCTs for some conditions and case series for others. Relevant outcomes are symptoms and functional outcomes. Three small RCTs of continuous passive motion after rotator cuff surgery showed some evidence that continuous passive motion after this shoulder surgery improved short-term pain and range of motion; however, the trials were not high-quality, and the small differences in outcomes may not be clinically important. Two trials reported short-term improvements in range of motion for patients undergoing continuous passive motion, and one reported a short-term reduction in pain. None reported long-term improvements, and there are no reported benefits in functional status. Therefore, the clinical significance of the short-term improvements reported is uncertain. In addition, there is uncertainty about the optimal PT regimen following shoulder surgery such that the optimal treatment comparator for continuous passive motion is unclear. A systematic review and two small RCTs compared continuous passive motion with conventional PT for treatment of adhesive capsulitis. The systematic review concluded that continuous passive motion may be effective in the short-term. One of the trials focused on diabetic patients with adhesive capsulitis. Both reported comparable improvements in range of motion and functional ability between treatment groups. Although no RCTs of continuous passive motion in the home setting after repair of the anterior cruciate ligament were identified, indirect evidence from RCTs conducted in the

inpatient immediate postoperative setting following anterior cruciate ligament repair indicated no additional benefit with continuous passive motion compared to conventional PT. One small RCT in humeral fractures also found short-term benefits of continuous passive motion, but by 3 months there was no significant difference between groups. For other musculoskeletal conditions, RCTs do not exist; case series either did not show efficacy of continuous passive motion or had important methodologic flaws. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have had a stroke requiring PT who receive continuous passive motion in the home setting, the evidence includes 2 small RCTs. Relevant outcomes are symptoms and functional outcomes. These trials reported mixed results; 1 RCT indicated a non-significant trend toward improvement in shoulder joint stability with continuous passive motion and PT relative to PT alone, while the other indicated significant improvement in functional outcomes related to wrist movement and global upper extremity movement symptoms with continuous passive motion plus conventional therapy relative to conventional therapy alone. Both trials were small and treatment lasted only 20 days in the shoulder joint study. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Policy History

Date	Action
7/2025	Annual policy review. Policy updated with literature review through March 19, 2025; reference added. Policy statements unchanged.
5/2024	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
5/2023	Annual policy review. Minor editorial refinements to policy statements; intent unchanged.
4/2022	Annual policy review. Policy statements unchanged.
4/2022	Clarified coding information.
5/2021	Annual policy review. Not medically necessary changed to investigational in second policy statement; but intent unchanged.
1/2021	Medicare information removed. See MP #132 Medicare Advantage Management for local coverage determination and national coverage determination reference.
5/2020	Annual policy review. Description, summary and references updated. Policy statements unchanged.
4/2019	Annual policy review. Description, summary and references updated. Policy statements unchanged.
5/2018	Annual policy review. Background and summary clarified. Policy note clarified. Prior Authorization Information reformatted. Effective 5/1/2018.
7/2017	Annual policy review. The word "intra-" removed from the second bullet point of the first policy statement and from the text. Policy statements otherwise unchanged.
4/2017	Annual policy review. New references added.
8/2016	Annual policy review. New references added.
4/2016	Annual policy review. New references added.
8/2015	Annual policy review. New references added.
9/2014	Annual policy review. New references added.
11/2013	Annual policy review. New medical policy describing ongoing medically necessary and not medically necessary indications. CPM is covered as a DME benefit up for to 21 days. Removed E0936 as it does not meet the intent of the policy.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

References

1. O'Driscoll SW, Giori NJ. Continuous passive motion (CPM): theory and principles of clinical application. *J Rehabil Res Dev.* 2000; 37(2): 179-88. PMID 10850824
2. Gholson JJ, Noiseux NO, Otero JE, et al. Patient Factors Systematically Influence Hospital Length of Stay in Common Orthopaedic Procedures. *Iowa Orthop J.* 2017; 37: 233-237. PMID 28852363
3. Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). Continuous Passive Motion as an Adjunct to Physical Therapy for Joint Rehabilitation. TEC Assessments. 1997; Volume 12:Tab 20.
4. McInnes J, Larson MG, Daltroy LH, et al. A controlled evaluation of continuous passive motion in patients undergoing total knee arthroplasty. *JAMA.* Sep 16 1992; 268(11): 1423-8. PMID 1512910
5. Milne S, Brosseau L, Robinson V, et al. Continuous passive motion following total knee arthroplasty. *Cochrane Database Syst Rev.* 2003; (2): CD004260. PMID 12804511
6. Brosseau L, Milne S, Wells G, et al. Efficacy of continuous passive motion following total knee arthroplasty: a metaanalysis. *J Rheumatol.* Nov 2004; 31(11): 2251-64. PMID 15517640
7. Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. *Cochrane Database Syst Rev.* Feb 06 2014; 2014(2): CD004260. PMID 24500904
8. Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. *Cochrane Database Syst Rev.* Mar 17 2010; (3): CD004260. PMID 20238330
9. He ML, Xiao ZM, Lei M, et al. Continuous passive motion for preventing venous thromboembolism after total knee arthroplasty. *Cochrane Database Syst Rev.* Jul 29 2014; 2014(7): CD008207. PMID 25069620
10. Yashar AA, Venn-Watson E, Welsh T, et al. Continuous passive motion with accelerated flexion after total knee arthroplasty. *Clin Orthop Relat Res.* Dec 1997; (345): 38-43. PMID 9418619
11. MacDonald SJ, Bourne RB, Rorabeck CH, et al. Prospective randomized clinical trial of continuous passive motion after total knee arthroplasty. *Clin Orthop Relat Res.* Nov 2000; (380): 30-5. PMID 11064970
12. Pope RO, Corcoran S, McCaul K, et al. Continuous passive motion after primary total knee arthroplasty. Does it offer any benefits?. *J Bone Joint Surg Br.* Nov 1997; 79(6): 914-7. PMID 9393903
13. Kumar PJ, McPherson EJ, Dorr LD, et al. Rehabilitation after total knee arthroplasty: a comparison of 2 rehabilitation techniques. *Clin Orthop Relat Res.* Oct 1996; (331): 93-101. PMID 8895624
14. Bruun-Olsen V, Heiberg KE, Mengshoel AM. Continuous passive motion as an adjunct to active exercises in early rehabilitation following total knee arthroplasty - a randomized controlled trial. *Disabil Rehabil.* 2009; 31(4): 277-83. PMID 18608367
15. Denis M, Moffet H, Caron F, et al. Effectiveness of continuous passive motion and conventional physical therapy after total knee arthroplasty: a randomized clinical trial. *Phys Ther.* Feb 2006; 86(2): 174-85. PMID 16445331
16. Leach W, Reid J, Murphy F. Continuous passive motion following total knee replacement: a prospective randomized trial with follow-up to 1 year. *Knee Surg Sports Traumatol Arthrosc.* Oct 2006; 14(10): 922-6. PMID 16489477
17. Boese CK, Weis M, Phillips T, et al. The efficacy of continuous passive motion after total knee arthroplasty: a comparison of three protocols. *J Arthroplasty.* Jun 2014; 29(6): 1158-62. PMID 24412145
18. Herbold JA, Bonistall K, Blackburn M, et al. Randomized controlled trial of the effectiveness of continuous passive motion after total knee replacement. *Arch Phys Med Rehabil.* Jul 2014; 95(7): 1240-5. PMID 24685389
19. Chen B, Zimmerman JR, Soulen L, et al. Continuous passive motion after total knee arthroplasty: a prospective study. *Am J Phys Med Rehabil.* 2000; 79(5): 421-6. PMID 10994883
20. Herbold JA, Bonistall K, Blackburn M. Effectiveness of continuous passive motion in an inpatient rehabilitation hospital after total knee replacement: a matched cohort study. *PM R.* Oct 2012; 4(10): 719-25. PMID 22959052
21. Worland RL, Arredondo J, Angles F, et al. Home continuous passive motion machine versus professional physical therapy following total knee replacement. *J Arthroplasty.* Oct 1998; 13(7): 784-7. PMID 9802665
22. Lenssen TA, van Steyn MJ, Crijns YH, et al. Effectiveness of prolonged use of continuous passive motion (CPM), as an adjunct to physiotherapy, after total knee arthroplasty. *BMC Musculoskelet Disord.* Apr 29 2008; 9: 60. PMID 18442423

23. Browne JE, Anderson AF, Arciero R, et al. Clinical outcome of autologous chondrocyte implantation at 5 years in US subjects. *Clin Orthop Relat Res.* Jul 2005; (436): 237-45. PMID 15995447
24. Farr J. Autologous chondrocyte implantation improves patellofemoral cartilage treatment outcomes. *Clin Orthop Relat Res.* Oct 2007; 463: 187-94. PMID 17960681
25. Rosenberger RE, Gomoll AH, Bryant T, et al. Repair of large chondral defects of the knee with autologous chondrocyte implantation in patients 45 years or older. *Am J Sports Med.* Dec 2008; 36(12): 2336-44. PMID 18725654
26. Nugent-Derfus GE, Takara T, O'Neill JK, et al. Continuous passive motion applied to whole joints stimulates chondrocyte biosynthesis of PRG4. *Osteoarthritis Cartilage.* May 2007; 15(5): 566-74. PMID 17157538
27. Salter RB. The biologic concept of continuous passive motion of synovial joints. The first 18 years of basic research and its clinical application. *Clin Orthop Relat Res.* May 1989; (242): 12-25. PMID 2650945
28. Fazalare JA, Griesser MJ, Siston RA, et al. The use of continuous passive motion following knee cartilage defect surgery: a systematic review. *Orthopedics.* Dec 01 2010; 33(12): 878. PMID 21162503
29. Howard JS, Mattacola CG, Romine SE, et al. Continuous Passive Motion, Early Weight Bearing, and Active Motion following Knee Articular Cartilage Repair: Evidence for Clinical Practice. *Cartilage.* Oct 2010; 1(4): 276-86. PMID 26069559
30. Hill AD, Palmer MJ, Tanner SL, et al. Use of Continuous Passive Motion in the Postoperative Treatment of Intra-Articular Knee Fractures. *J Bone Joint Surg Am.* Jul 16 2014; 96(14): e118. PMID 25031380
31. Wright RW, Preston E, Fleming BC, et al. A systematic review of anterior cruciate ligament reconstruction rehabilitation: part I: continuous passive motion, early weight bearing, postoperative bracing, and home-based rehabilitation. *J Knee Surg.* Jul 2008; 21(3): 217-24. PMID 18686484
32. Culvenor AG, Girdwood MA, Juhl CB, et al. Rehabilitation after anterior cruciate ligament and meniscal injuries: a best-evidence synthesis of systematic reviews for the OPTIKNEE consensus. *Br J Sports Med.* Dec 2022; 56(24): 1445-1453. PMID 35768181
33. Gatewood CT, Tran AA, Dragoo JL. The efficacy of post-operative devices following knee arthroscopic surgery: a systematic review. *Knee Surg Sports Traumatol Arthrosc.* Feb 2017; 25(2): 501-516. PMID 27695905
34. Friemert B, Bach C, Schwarz W, et al. Benefits of active motion for joint position sense. *Knee Surg Sports Traumatol Arthrosc.* Jun 2006; 14(6): 564-70. PMID 16328464
35. Du Plessis M, Eksteen E, Jenneker A, et al. The effectiveness of continuous passive motion on range of motion, pain and muscle strength following rotator cuff repair: a systematic review. *Clin Rehabil.* Apr 2011; 25(4): 291-302. PMID 20943710
36. Lastayo PC, Wright T, Jaffe R, et al. Continuous passive motion after repair of the rotator cuff. A prospective outcome study. *J Bone Joint Surg Am.* Jul 1998; 80(7): 1002-11. PMID 9698005
37. Raab MG, Rzeszutko D, O'Connor W, et al. Early results of continuous passive motion after rotator cuff repair: a prospective, randomized, blinded, controlled study. *Am J Orthop (Belle Mead NJ).* Mar 1996; 25(3): 214-20. PMID 8775698
38. Michael JW, König DP, Imhoff AB, et al. [Efficiency of a postoperative treatment after rotator cuff repair with a continuous passive motion device (CPM)]. *Z Orthop Ihre Grenzgeb.* 2005; 143(4): 438-45. PMID 16118760
39. Garofalo R, Conti M, Notarnicola A, et al. Effects of one-month continuous passive motion after arthroscopic rotator cuff repair: results at 1-year follow-up of a prospective randomized study. *Musculoskelet Surg.* May 2010; 94 Suppl 1: S79-83. PMID 20383685
40. Simkin PA, de Lateur BJ, Alquist AD, et al. Continuous passive motion for osteoarthritis of the hip: a pilot study. *J Rheumatol.* Sep 1999; 26(9): 1987-91. PMID 10493681
41. Olasinde AA, Olisa O, Muhumuza J, et al. Early outcome measurement of the effectiveness of conventional physical therapy versus continuous passive motion in knee function following retrograde femoral nailing-a prospective randomized controlled trial. *Int Orthop.* Aug 2023; 47(8): 2085-2093. PMID 37269402
42. Baradaran A, Ebrahimzadeh MH, Sabzevari S, et al. Is there any advantage between using continuous passive motion and conventional physical therapy in patients with primary adhesive capsulitis?: A systematic review and meta-analysis. *J Bodyw Mov Ther.* Oct 2023; 36: 133-141. PMID 37949549
43. Dundar U, Toktas H, Cakir T, et al. Continuous passive motion provides good pain control in patients with adhesive capsulitis. *Int J Rehabil Res.* Sep 2009; 32(3): 193-8. PMID 19011582

44. Ekim AA, İnal EE, Gönüllü E, et al. Continuous passive motion in adhesive capsulitis patients with diabetes mellitus: A randomized controlled trial. *J Back Musculoskelet Rehabil.* Nov 21 2016; 29(4): 779-786. PMID 27002662
45. Lindenhovius AL, van de Luitgaarden K, Ring D, et al. Open elbow contracture release: postoperative management with and without continuous passive motion. *J Hand Surg Am.* 2009; 34(5): 858-65. PMID 19362791
46. Ring D, Simmons BP, Hayes M. Continuous passive motion following metacarpophalangeal joint arthroplasty. *J Hand Surg Am.* May 1998; 23(3): 505-11. PMID 9620192
47. Schwartz DA, Chafetz R. Continuous passive motion after tenolysis in hand therapy patients: a retrospective study. *J Hand Ther.* 2008; 21(3): 261-6; quiz 267. PMID 18652971
48. Zeifang F, Carstens C, Schneider S, et al. Continuous passive motion versus immobilisation in a cast after surgical treatment of idiopathic club foot in infants: a prospective, blinded, randomised, clinical study. *J Bone Joint Surg Br.* Dec 2005; 87(12): 1663-5. PMID 16326882
49. Kasten P, Geiger F, Zeifang F, et al. Compliance with continuous passive movement is low after surgical treatment of idiopathic club foot in infants: a prospective, double-blinded clinical study. *J Bone Joint Surg Br.* Mar 2007; 89(3): 375-7. PMID 17356153
50. Gavish L, Barzilay Y, Koren C, et al. Novel continuous passive motion device for self-treatment of chronic lower back pain: a randomised controlled study. *Physiotherapy.* Mar 2015; 101(1): 75-81. PMID 25280603
51. Tille E, Lorenz F, Beyer F, et al. Early functional improvements using continuous passive motion therapy after angular-stable plate osteosynthesis of proximal humerus fractures - results of a prospective, randomized trial. *J Orthop Surg Res.* May 28 2024; 19(1): 313. PMID 38802866
52. Lynch D, Ferraro M, Krol J, et al. Continuous passive motion improves shoulder joint integrity following stroke. *Clin Rehabil.* Sep 2005; 19(6): 594-9. PMID 16180594
53. Kuo LC, Yang KC, Lin YC, et al. Internet of Things (IoT) Enables Robot-Assisted Therapy as a Home Program for Training Upper Limb Functions in Chronic Stroke: A Randomized Control Crossover Study. *Arch Phys Med Rehabil.* Mar 2023; 104(3): 363-371. PMID 36122608
54. Jette DU, Hunter SJ, Burkett L, et al. Physical Therapist Management of Total Knee Arthroplasty. *Phys Ther.* Aug 31 2020; 100(9): 1603-1631. PMID 32542403
55. American Academy of Orthopaedic Surgeons. Surgical management of osteoarthritis of the knee: Evidence-based clinical practice guideline. Rosemont, IL: AAOS; 2015.
56. American Academy of Orthopaedic Surgeons. Surgical Management of Osteoarthritis of the Knee Evidence Based Clinical Practice Guideline. Published December 2, 2022. Accessed March 17, 2025.
57. Center for Medicare & Medicaid. National Coverage Decision (NCD) for Durable Medical Equipment Reference List (280.1). 2023; <https://www.cms.gov/medicare-coverage-database/view/ncd.aspx?ncdid=190&ncdver=3&bc=0>. Accessed March 17, 2025.