MEDICAL POLICY

POLICY TITLE	MECHANICAL STRETCHING DEVICES FOR CONTRACTURE AND JOINT STIFFNESS
POLICY NUMBER	MP-6.039

Effective Date:	10/1/2023

I. POLICY

MECHANICAL STRETCHING DEVICES

Dynamic Splinting Devices

Dynamic splinting devices for the knee, elbow, wrist, finger, or toe may be considered **medically necessary** for the following indications:

- As an adjunct to physical therapy when there are documented signs and symptoms of significant motion stiffness or loss in the sub-acute injury or post-operative period (i.e., at least three weeks after injury or surgery); **OR**
- During the acute post-operative period where there is prior documented history of motion stiffness or loss in a joint when additional surgery or procedures are done to improve motion to that joint.

Continued use beyond an eight (8) week period will require medical director review.

The prophylactic use of dynamic splinting in the management of chronic contractures (no significant change in a motion for a four month period) and joint stiffness due to joint trauma, fractures, burns, head and spinal cord injuries, rheumatoid arthritis, multiple sclerosis, muscular dystrophy, or cerebral palsy is considered **not medically necessary.**

Joint Active System splints

Joint Active System Splints are considered **investigational**, as there is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with these devices.

Extensionator and flexionator devices

Extensionator and flexionator devices are considered **investigational**, as there is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with these devices.

Continuous Passive Motion Device (CPM)

Use of continuous passive motion (CPM) in the home setting may be considered **medically necessary** as an adjunct to physical therapy in the following situations:

- During the non-weight bearing rehabilitation period following articular cartilage repair procedures of the knee (e.g., microfracture, osteochondral grafting, autologous

chondrocyte implantation, treatment of osteochondritis dissecans, repair of tibial plateau fractures); **OR**

- Under conditions of low postoperative mobility or inability to comply with rehabilitation exercises following a total knee arthroplasty (TKA), TKA revision or other major knee surgery. This may include patients 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.

Use of the CPM device should commence within two (2) days of surgery and the maximum benefit is usually obtained within fourteen (14) days from the start of therapy. Continued use beyond 6 weeks following surgery of any type is generally considered **not medically necessary** or appropriate; including following knee arthroscopy with microfracture.

The use of a CPM device for other joints including, but not limited to, major hip joint and shoulder surgery is considered **not medically necessary**.

II. PRODUCT VARIATIONS

Top

This policy is only applicable to certain programs and products administered by Capital Blue Cross please see additional information below, and subject to benefit variations as discussed in Section VI below.

FEP PPO - Refer to FEP Medical Policy Manual. The FEP Medical Policy manual can be found at: https://www.fepblue.org/benefit-plans/medical-policies-and-utilization-management-guidelines/medical-policies

III. DESCRIPTION/BACKGROUND

Top

Mechanical Stretching Devices

Joint stiffness, contracture and diminished range of motion can result from surgery, illness, trauma, immobilization or congenital abnormalities. Prefabricated or custom fabricated devices worn across a stiff or contractured joint to provide incremented tension in one or both directions can increase range of motion. These devices are manually controlled by the patient and can be used alone or in conjunction with physical therapy.

A dynamic splint is a custom fit, spring-loaded device designed to provide low intensity stretch force. These devices provide a low-load, prolonged stretch to joints while an individual is asleep or at rest. Dynamic splinting devices are available for the elbow, wrist, finger, shoulder, knee, ankle and toes. Examples of available product names for dynamic splinting include: Dynasplint ™, Ultraflex ™, LMB Pro-glide™, EMPI Advance™, and SaeboFlex.

The ERMI Shoulder Flexionater® is a device designed to isolate and treat decreased glenohumeral abduction and external rotation from excessive scar tissue. This is a

customizable device with biomechanical and anatomically located pads, which focus treatment on the glenohumeral joint, without stressing the other shoulder joints. The shoulder flexionator can be used by the patient at home without assistance to perform serial stretching exercises. The knee/ankle flexionator (ERMI Knee/Ankle Flexionater®) is a self-contained device that aids recovery from decreased range of motion of the knee and/or ankle joints. The knee extensionator (ERMI Knee Extensionater®) and elbow extensionator (ERMI Shoulder Extensionater®) provide serial stretching, using a patient controlled pneumatic device that can deliver variable loads to the affected joint.

Joint Active Systems (JAS) Splints use static progressive stretch. The patient sets the device angle at the beginning of a session and every few minutes increases the angle. Sessions usually lasts thirty minutes and are repeated up to three times per day.

Continuous Passive Motion Devices

Physical therapy (PT) 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 (CPM) devices have also been used. CPM 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. CPM 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 CPM use for other weight-bearing joints (i.e., hip, ankle, metatarsals) as well as non-weight-bearing joints (i.e., shoulder, elbow, metacarpals, interphalangeal joints). Use of CPM in stroke and burn patients is also being explored.

The device used for the knee moves the joint (e.g., flexion and extension) without patient assistance, continuously for extended periods of time (i.e., up to 24 h/d). An electrical power unit is used to set the variable range of motion (ROM) and speed. The initial settings for ROM are based on a patient's level of comfort and other factors assessed intraoperatively. The ROM is increased by 3° to 5° per day, as tolerated. The speed and ROM 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 may be done either as an outpatient or with a length of stay of 1 to 2 days. As a result, there has been a considerable shift in the rehabilitation regimen, moving from an intensive in-hospital program to a less intensive outpatient program. Some providers may want patients to continue CPM 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 CPM in the home setting as it is currently being prescribed postoperatively. Relevant comparisons are treatment outcomes of CPM when used alone or with PT, compared with PT alone.

Regulatory Status
Continuous passive motion devices are considered class I devices by the U.S. Food and Drug Administration (FDA) and are exempt from 510(k) requirements. This classification does not require submission of clinical data on efficacy but only notification of FDA prior to marketing. FDA product code: BXB.

IV. RATIONALE

Top

CPM

Summary of Evidence
For individuals who have total knee arthroplasty (TKA) who receive continuous passive motion (CPM) in the home setting, the evidence includes randomized clinical trials (RCTs), case series, and systematic reviews. Relevant outcomes are symptoms and functional outcomes. Early trials generally used CPM 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 CPM after TKA, recent studies have suggested that institutional and home use of CPM has no benefit compared to standard physical therapy (PT). There were no studies evaluating CPM in patients who could not perform standard PT. The evidence is insufficient to determine the effects of the technology on health outcomes.

For patients unable to tolerate exercise regimens following total knee arthroplasty, continuous passive motion is an alternative modality. However, there is no evidence to support its use in this situation. Clinical input obtained in 2010 supports the use of continuous passive motion under conditions of low postoperative mobility or inability to comply with rehabilitation exercises following a total knee arthroplasty or total knee arthroplasty revision.

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

In 2015, the American Academy of Orthopaedic Surgeons published an Evidence-Based Clinical Practice Guideline for Surgical Management of Osteoarthritis of the Knee. According to the AAOS, "strong evidence supports that CPM after knee arthroplasty (KA) does not improve outcomes." Clinical input obtained in 2022 supports the judicious use of CPM as described in this policy.

For individuals who have musculoskeletal conditions other than TKA or knee cartilage repair requiring PT who receive CPM in the home setting, the evidence includes RCTs for some conditions and case series for others. Relevant outcomes are symptoms and functional

outcomes. Three small RCTs of CPM after rotator cuff surgery showed some evidence that CPM after this shoulder surgery improved short-term pain and range of motion (ROM); 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 ROM for patients undergoing CPM, 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 CPM is unclear. Two small RCTs compared CPM with conventional PT for treatment of adhesive capsulitis. One of the trials focused on diabetic patients with adhesive capsulitis. Both reported comparable improvements in ROM and functional ability between treatment groups. For other musculoskeletal conditions, RCTs do not exist; case series either did not show efficacy of CPM or had important methodologic flaws. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have had a stroke requiring PT who receive CPM in the home setting, the evidence includes a small RCT. The relevant outcomes are symptoms and functional outcomes. This trial reported a trend toward improved shoulder joint stability, but no statistical difference between CPM plus PT compared to PT alone. The trial was small and treatment lasted only 20 days. The evidence is insufficient to determine the effects of the technology on health outcomes.

V. DEFINITIONS

Top

AUTOLOGOUS CHONDROCYTE TRANSPLANTATION (ACT) is a surgical treatment aimed at repairing the damaged hyaline cartilage by transplanting regenerated hyaline-like cartilage to restore usable function.

OSTEOCHONDRAL refers to bone and cartilage.

PASSIVE MOTION is a therapeutic exercise technique used to move patients' joints through ROM without patient effort. This type of therapy is accomplished by a physical therapist or with the assistance of equipment, such as a CPM device.

IMMEDIATE POSTOPERATIVE PERIOD is a time period within one week of the surgical procedure. This period may be extended up to thirty days after the surgery, given individual circumstances.

VI. BENEFIT VARIATIONS

Top

The existence of this medical policy does not mean that this service is a covered benefit under the member's health benefit plan. Benefit determinations should be based in all cases on the applicable health benefit plan language. Medical policies do not constitute a description of benefits. A member's health benefit plan governs which services are covered, which are excluded, which are subject to benefit limits and which require preauthorization. There are different benefit plan designs in each product administered by Capital Blue Cross. Members

and providers should consult the member's health benefit plan for information or contact Capital Blue Cross for benefit information.

VII. DISCLAIMER

Top

Capital Blue Cross's medical policies are developed to assist in administering a member's benefits, do not constitute medical advice and are subject to change. Treating providers are solely responsible for medical advice and treatment of members. Members should discuss any medical policy related to their coverage or condition with their provider and consult their benefit information to determine if the service is covered. If there is a discrepancy between this medical policy and a member's benefit information, the benefit information will govern. If a provider or a member has a question concerning the application of this medical policy to a specific member's plan of benefits, please contact Capital Blue Cross' Provider Services or Member Services. Capital Blue Cross considers the information contained in this medical policy to be proprietary and it may only be disseminated as permitted by law.

VIII. CODING INFORMATION

Top

Note*:* This list of codes may not be all-inclusive, and codes are subject to change at any time. The identification of a code in this section does not denote coverage as coverage is determined by the terms of member benefit information. In addition, not all covered services are eligible for separate reimbursement.

Investigational; therefore, not covered, joint active system splints (static progressive stretch):

Procedure Codes							
E1801	E1806	E1811	E1816	E1818	E1821	E1831	E1841

Not medically necessary; therefore, not covered, dynamic splinting devices:

Procedure Codes							
E1802	E1815		E1840				

Covered when medically necessary, dynamic splinting devices

Procedure Codes							
E1800	E1805	E1810	E1812	E1825	E1830	29126	29131

POLICY TITLE	MECHANICAL STRETCHING DEVICES FOR CONTRACTURE AND JOINT STIFFNESS
POLICY NUMBER	MP-6.039

ICD-10-CM Diagnosis Codes	Description
M24.521	Contracture, right elbow
M24.522	Contracture, left elbow
M24.531	Contracture, right wrist
M24.532	Contracture, left wrist
M24.561	Contracture, right knee
M24.562	Contracture, left knee
M25.621	Stiffness of right elbow, not elsewhere classified
M25.622	Stiffness of left elbow, not elsewhere classified
M25.631	Stiffness of right wrist, not elsewhere classified
M25.632	Stiffness of left wrist, not elsewhere classified
M25.661	Stiffness of right knee, not elsewhere classified
M25.662	Stiffness of left knee, not elsewhere classified
M25.69	Stiffness of other specified joint, note elsewhere classified

Not medically necessary; therefore, not covered, continuous passive motion device (CPM):

Procedure Codes							
E0936							

Covered when medically necessary; continuous passive motion device (CPM):

Procedure Codes							
E0935							

ICD-10-CM Diagnosis Codes	Description
G90.521	Complex regional pain syndrome I of right lower limb
G90.522	Complex regional pain syndrome I of left lower limb
G90.523	Complex regional pain syndrome I of lower limb, bilateral
G90.59	Complex regional pain syndrome I of other specified site
M17.0	Bilateral primary osteoarthritis of knee
M17.11	Unilateral primary osteoarthritis, right knee

POLICY TITLE	MECHANICAL STRETCHING DEVICES FOR CONTRACTURE AND JOINT STIFFNESS
POLICY NUMBER	MP-6.039

ICD-10-CM Diagnosis Codes	Description
M17.12	Unilateral primary osteoarthritis, left knee
M23.211	Derangement of anterior horn of medial meniscus due to old tear or injury, right knee
M23.212	Derangement of anterior horn of medial meniscus due to old tear or injury, left knee
M23.221	Derangement of posterior horn of medial meniscus due to old tear or injury, right knee
M23.222	Derangement of posterior horn of medial meniscus due to old tear or injury, left knee
M23.231	Derangement of other medial meniscus due to old tear or injury, right knee
M23.232	Derangement of other medial meniscus due to old tear or injury, left knee
M23.241	Derangement of anterior horn of lateral meniscus due to old tear or injury, right knee
M23.242	Derangement of anterior horn of lateral meniscus due to old tear or injury, left knee
M23.251	Derangement of posterior horn of lateral meniscus due to old tear or injury, right knee
M23.252	Derangement of posterior horn of lateral meniscus due to old tear or injury, left knee
M23.261	Derangement of other lateral meniscus due to old tear or injury, right knee
M23.262	Derangement of other lateral meniscus due to old tear or injury, left knee
M23.311	Other meniscus derangements, anterior horn of medial meniscus, right knee
M23.312	Other meniscus derangements, anterior horn of medial meniscus, left knee
M23.321	Other meniscus derangements, posterior horn of medial meniscus, right knee
M23.322	Other meniscus derangements, posterior horn of medial meniscus, left knee
M23.331	Other meniscus derangements, other medial meniscus, right knee
M23.332	Other meniscus derangements, other medial meniscus, left knee
M23.341	Other meniscus derangements, anterior horn of lateral meniscus, right knee
M23.342	Other meniscus derangements, anterior horn of lateral meniscus, left knee
M23.351	Other meniscus derangements, posterior horn of lateral meniscus, right knee
M23.352	Other meniscus derangements, posterior horn of lateral meniscus, left knee
M23.361	Other meniscus derangements, other lateral meniscus, right knee
M23.362	Other meniscus derangements, other lateral meniscus, left knee
M23.8X1	Other internal derangements of right knee
M23.8X2	Other internal derangements of left knee

POLICY TITLE	MECHANICAL STRETCHING DEVICES FOR CONTRACTURE AND JOINT STIFFNESS
POLICY NUMBER	MP-6.039

ICD-10-CM Diagnosis Codes	Description
M24.661	Ankylosis, right knee
M24.662	Ankylosis, left knee
M93.261	Osteochondritis dissecans, right knee
M93.262	Osteochondritis dissecans, left knee
S83.211A	Bucket-handle tear of medial meniscus, current injury, right knee, initial encounter
S83.211D	Bucket-handle tear of medial meniscus, current injury, right knee, subsequent encounter
S83.212A	Bucket-handle tear of medial meniscus, current injury, left knee, initial encounter
S83.212D	Bucket-handle tear of medial meniscus, current injury, left knee, subsequent encounter
S83.221A	Peripheral tear of medial meniscus, current injury, right knee, initial encounter
S83.221D	Peripheral tear of medial meniscus, current injury, right knee, subsequent encounter
S83.222A	Peripheral tear of medial meniscus, current injury, left knee, initial encounter
S83.222D	Peripheral tear of medial meniscus, current injury, left knee, subsequent encounter
S83.231A	Complex tear of medial meniscus, current injury, right knee, initial encounter
S83.231D	Complex tear of medial meniscus, current injury, right knee, subsequent encounter
S83.232A	Complex tear of medial meniscus, current injury, left knee, initial encounter
S83.232D	Complex tear of medial meniscus, current injury, left knee, subsequent encounter
S83.241A	Other tear of medial meniscus, current injury, right knee, initial encounter
S83.241D	Other tear of medial meniscus, current injury, right knee, subsequent encounter
S83.242A	Other tear of medial meniscus, current injury, left knee, initial encounter
S83.242D	Other tear of medial meniscus, current injury, left knee, subsequent encounter
S83.251A	Bucket-handle tear of lateral meniscus, current injury, right knee, initial encounter
S83.251D	Bucket-handle tear of lateral meniscus, current injury, right knee, subsequent encounter
S83.252A	Bucket-handle tear of lateral meniscus, current injury, left knee, initial encounter
S83.252D	Bucket-handle tear of lateral meniscus, current injury, left knee, subsequent encounter
S83.261A	Peripheral tear of lateral meniscus, current injury, right knee, initial encounter
S83.261D	Peripheral tear of lateral meniscus, current injury, right knee, subsequent encounter
S83.262A	Peripheral tear of lateral meniscus, current injury, left knee, initial encounter

ICD-10-CM Diagnosis Codes	Description
S83.262D	Peripheral tear of lateral meniscus, current injury, left knee, subsequent encounter
S83.271A	Complex tear of lateral meniscus, current injury, right knee, initial encounter
S83.271D	Complex tear of lateral meniscus, current injury, right knee, subsequent encounter
S83.272A	Complex tear of lateral meniscus, current injury, left knee, initial encounter
S83.272D	Complex tear of lateral meniscus, current injury, left knee, subsequent encounter
S83.281A	Other tear of lateral meniscus, current injury, right knee, initial encounter
S83.281D	Other tear of lateral meniscus, current injury, right knee, subsequent encounter
S83.282A	Other tear of lateral meniscus, current injury, left knee, initial encounter
S83.282D	Other tear of lateral meniscus, current injury, left knee, subsequent encounter
S83.32XA	Tear of articular cartilage of left knee, current, initial encounter
Z47.1	Aftercare following joint replacement surgery
Z47.33	Aftercare following explantation of knee joint prosthesis
Z96.651	Presence of right artificial knee joint
Z96.652	Presence of left artificial knee joint
Z96.653	Presence of artificial knee joint, bilateral

IX. REFERENCES

Top

Mechanical Stretching Devices

1. *Bonutti PM, Marulanda GA, McGrath MS, et al. Static progressive stretch improves range of motion in arthrofibrosis following total knee arthroplasty. Knee Surg Sports Traumatol Arthrosc. 2010;18(2):194-199*
2. *Centers for Medicare and Medicaid Services (CMS). National Coverage Determination (NCD): 280.1. Durable Medical Equipment. 5/5/05. Accessed May 27, 2022.*
3. *Dynasplint Systems, Inc. Products.. Accessed May 27, 2022.*
4. *Evans PJ, Nandi S, Maschke S, et al. Prevention and treatment of elbow stiffness. J Hand Surg Am. 2009;34(4):769-778. Larson D, Jerosch-Herold C. Clinical effectiveness of post-operative splinting after surgical release of Dupuytren's contracture: A systematic review. BMC Musculoskelet Disord. 2008;9:104*
5. *McGrath MS, Ulrich SD, Bonutti PM, et al. Evaluation of static progressive stretch for the treatment of wrist stiffness. J Hand Surg Am. 2008;33(9):1498-1504.*
6. *Ulrich SD, Bonutti PM, Seyler TM, et al. Restoring range of motion via stress relaxation and static progressive stretch in posttraumatic elbow contractures. J Shoulder Elbow Surg. 2010;19(2):196-201.*
7. *Lundequam, P., & Willis, F. B. (2009). Dynamic splinting home therapy for toe walking: a case report. Cases journal, 2, 188.*

8. *John MM, Kalish S, Perns SV, Willis FB. Dynamic splinting for postoperative hallux limitus: a randomized, controlled trial. J Am Podiatr Med Assoc. 2011 Jul-Aug; 101(4):285-8. doi: 10.7547/1010285. PMID: 21816996.*

Continuous Passive Motion Devices

1. *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.*
2. *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):1423-1428. PMID 1512910*
3. *Milne S, Brosseau L, Robinson V, et al. Continuous passive motion following total knee arthroplasty. Cochrane Database Syst Rev. Jun 2003(2):CD004260. PMID 12804511*
4. *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):2251-2264. PMID 15517640*
5. *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*
6. *Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. Cochrane Database Syst Rev. Feb 6 2014;2(2):CD004260. PMID 24500904*
7. *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;7(7):CD008207. PMID 25069620*
8. *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*
9. *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):30-35. PMID 11064970*
10. *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):914-917. PMID 9393903*
11. *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*
12. *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. Jul 2009;31(4):277-283. PMID 18608367*
13. *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):174-185. PMID 16445331*

14. *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):922-926. PMID 16489477*
15. *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):1158-1162. PMID 24412145*
16. *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):1240-1245. PMID 24685389*
17. *Chen B, Zimmerman JR, Soulen L, et al. Continuous passive motion after total knee arthroplasty: a prospective study. Am J Phys Med Rehabil. Sep-Oct 2000;79(5):421-426. PMID 10994883*
18. *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):719-725. PMID 22959052*
19. *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):784-787. PMID 9802665*
20. *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*
21. *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):237-245. PMID 15995447*
22. *Farr J. Autologous chondrocyte implantation improves patellofemoral cartilage treatment outcomes. Clin Orthop Relat Res. Oct 2007;463:187-194. PMID 17960681*
23. *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):2336-2344. PMID 18725654*
24. *Nugent-Derfus GE, Takara T, O'Neill J K, et al. Continuous passive motion applied to whole joints stimulates chondrocyte biosynthesis of PRG4. Osteoarthritis Cartilage. May 2007;15(5):566-574. PMID 17157538*
25. *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*
26. *Fazalare JA, Griesser MJ, Siston RA, et al. The use of continuous passive motion following knee cartilage defect surgery: a systematic review. Orthopedics. Dec 2010;33(12):878. PMID 21162503*
27. *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):276-286. PMID 26069559*
28. *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*

29. *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):217-224. PMID 18686484*
30. *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*
31. *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):1002-1011. PMID 9698005*
32. *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):214-220. PMID 8775698*
33. *Michael JW, Konig DP, Imhoff AB, et al. [Efficiency of a postoperative treatment after rotator cuff repair with a continuous passive motion device (CPM)] [German]. Z Orthop Ihre Grenzgeb. Jul-Aug 2005;143(4):438-445. PMID 16118760*
34. *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*
35. *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):1987-1991. PMID 10493681*
36. *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):193-198. PMID 19011582*
37. *Ekim AA, Inal EE, Gonullu 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*
38. *Lindenhovius AL, van de Luijtgaarden K, Ring D, et al. Open elbow contracture release: postoperative management with and without continuous passive motion. J Hand Surg Am. May-Jun 2009;34(5):858-865. PMID 19362791*
39. *Ring D, Simmons BP, Hayes M. Continuous passive motion following metacarpophalangeal joint arthroplasty. J Hand Surg Am. May 1998;23(3):505-511. PMID 9620192*
40. *Schwartz DA, Chafetz R. Continuous passive motion after tenolysis in hand therapy patients: a retrospective study. J Hand Ther. Jul-Sep 2008;21(3):261-266; quiz 267. PMID 18652971*
41. *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):1663-1665. PMID 16326882*
42. *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):375-377. PMID 17356153*

43. *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*
44. *Lynch D, Ferraro M, Krol J, et al. Continuous passive motion improves shoulder joint integrity following stroke. Clin Rehabil. Sep 2005;19(6):594-599. PMID 16180594*
45. *American Academy of Orthopaedic Surgeons. Surgical management of osteoarthritis of the knee: Evidence-based clinical practice guideline. Rosemont, IL: AAOS; 2015.*
46. *Postel JM, Thoumie P, Missaoui B, et al. Continuous passive motion compared with intermittent mobilization after total knee arthroplasty. Elaboration of French clinical practice guidelines. Ann Readapt Med Phys. May 2007;50(4):244-257. PMID 17412445*
47. *Center for Medicare & Medicaid. National Coverage Decision (NCD) for Durable Medical Equipment Reference List (280.1). 2005;. Accessed June 1, 2022.*
48. *American Academy of Orthopaedic Surgeons. Surgical Management of Osteoarthritis of the Knee Evidence Based Clinical Practice Guideline. Published 12/02/2022. Accessed 7/24/2023*
49. *Schulze C, Knaack F, Goosmann M, Mittelmeier W, Bader R. Kontinuierliche passive Bewegungstherapie (CPM-Therapie) in der orthopädischen Rehabilitation am Schultergelenk – eine Literaturübersicht [Continuous Passive Motion in Orthopaedic Rehabilitation of the Shoulder Girdle - A Literature Survey]. Rehabilitation (Stuttg). 2021;60(6):364-373. doi:10.1055/a-1500-8567*
50. *Blue Cross Blue Shield Association Medical Policy Reference Manual. 1.01.10, Continuous Passive Motion in the Home Setting. April 2023*

Joint Active Systems

1. *Joint Active Systems, Inc. . Accessed May 27, 2022.*

X. POLICY HISTORY

Top

MP 6.039	**CAC 2/22/05**
	CAC 3/28/06
	CAC 3/27/07
	CAC 5/27/08
	CAC 5/26/09
	CAC 5/25/10 Consensus.
	CAC 9/28/10 Adopted BCBSA criteria language regarding CPM use for conditions of low postoperative mobility or inability to comply with rehabilitation exercises. Revised CPM statement for other joints from “investigational” to “not medically necessary”. Adopted BCBSA “not medically necessary” statement for the use of a CPM device for all other conditions not specified in medically necessary criteria.
	CAC 10/25/11 Consensus Review. Reference to FEP medical policy added.
	10/23/12- Codes reviewed

	CAC 3/26/13 Consensus Review. References updated. Added BCBSA Background/Description for Continuous Passive Motion Devices.
	05/13/13 Administrative code review.
	CAC 1/28/14 Consensus review. References updated. No changes to the policy statements. Codes reviewed.
	CAC 1/27/15 Consensus review. References updated. Added rationale. No change to policy statements. 12/30/2014 Coding reviewed. Updated the ICD 9 ranges
	CAC 1/26/16 Consensus review. No changes to the policy statements. References and rationale updated**.** Coding reviewed and updated.
	11/10/16 Administrative update. Variation reformatting
	CAC 3/28/17 Consensus review. No changes to the policy statements. References and rationale updated. Coding reviewed.
	12/29/17 Consensus review. The word "intra-" removed from the second bullet point of the first policy statement and from the text. Intent of policy statements unchanged. References, background and rationale updated.
	11/27/18 Consensus review. No change to policy statements. References and background updated. Rationale condensed.
	9/30/2019 Consensus review. No change to policy statements. References updated.
	9/1/20 Administrative update. Added ICD 10 code M25.69
	9/10/2020 Consensus review. Background, Rationale and References updated. Added ICD 10 codes.
	6/14/2021 Consensus review. FEP, Rationale, and References updated. No changes to coding.
	6/9/2022 Minor review. Changed dynamic splinting of the toe to MN. Updated FEP, references. Updated coding so E1830 is now MN.
	7/20/2023 Administrative update. Moved E1830 from NMN table to MN table.
	7/24/2023 Consensus review. No changes to policy statement. References updated. Coding reviewed, no changes.

Top