Clinical Policy: Mechanical Stretching Devices for Joint Stiffness and Contracture

Reference Number: CP.MP.144 Coding Implications
Last Review Date: 04/19 Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description

Mechanical stretching devices are used for the prevention and treatment of joint contractures of the extremities, with the goal to maintain or restore range of motion (ROM) to the joint. A variety of mechanical stretching devices are available for extension or flexion of the shoulder, elbow, wrist, fingers, knee, ankle, and toes. These devices are generally used as adjunct treatment to physical therapy and/or exercise.

Policy/Criteria

I. It is the policy of health plans affiliated with Centene Corporation® that the low-load prolonged-duration stretch (LLPS) device /dynamic stretch device is **medically necessary** for rehabilitation following extensor tendon injuries of the finger.

II. It is the policy of health plans affiliated with Centene Corporation that the static progressive stretch (SPS) device is considered **not medically necessary** for the shoulder, wrist, knee, ankle, or toe joints.

III. It is the policy of health plans affiliated with Centene Corporation that LLPS is considered **not medically necessary** for the shoulder, ankle, or toe joints.

IV. Patient-actuated serial stretch (PASS) devices are considered **not medically necessary** for any indications.

Background

A joint contracture is characterized by chronically reduced ROM secondary to structural changes in non-bony tissues, including muscle, tendons, ligaments, and skin. Prolonged immobilization of joints following surgery or trauma is the most common cause of joint contractures. A number of different modalities are used to treat or prevent joint contractures.

Mechanical stretching devices have been investigated for the treatment of joint contractures. The use of these devices is based on the theory that passive motion early in the healing process can promote movement of the synovial fluid, and thus promote lubrication of the joint; stimulate the healing of articular tissues; prevent adhesions and joint stiffness; and reduce edema without interfering with the healing of incisions or wounds over the moving joint.

Several types of devices exist, including low-load prolonged duration stretch devices (LLPS) (also referred to as dynamic splinting), static progressive stretch devices (SPS), and patient-actuated serial stretch (PASS) (also known as patient-directed serial stretch) devices.

- LLPS devices permit resisted active and passive motion (elastic traction) within a limited range. LLPS devices maintain a set level of tension by means of incorporated springs.

- SPS devices hold the joint in a set position but allow for manual modification of the joint angle and may allow for active motion without resistance (inelastic traction). This type of device itself does not exert a stress on the tissue unless the joint angle is set at the maximum ROM.
- PASS devices permit resisted active and passive motion within a limited range utilizing pneumatic or hydraulic systems that can be adjusted by the patient. The extensionaters use pneumatic systems while the flexionaters use hydraulic systems. These devices require custom fitting.

Mechanical stretching devices are commonly used in the post-operative period, following an injury or when addressing joint stiffness in the knee, ankle, toe, shoulder, elbow, wrist, or finger. Peer reviewed studies investigating mechanical stretching devices are limited. The best evidence is available in studies evaluating LLPS when used at the knee, elbow, wrist, and following extensor tendon injuries of the finger and for SPS when used at the elbow.

Several authors have looked at the implementation of dynamic splinting at the finger following an extensor tendor repair. Results from a small, prospective, randomized trial comparing dynamic splinting to static splinting suggest that dynamic splinting of complex lacerations of the extensor tendons in zones V-VII provides improved functional outcomes at 4 and 12 weeks and 6 months when compared with static splinting.[1] Another small, prospective, randomized, controlled study comparing postoperative dynamic- versus static- splinting outcomes of patients following extensor tendon repair reported dynamic splinting of simple, complete lacerations of the extensor tendons in zones V and VI. Dynamic splinting provided improved functional outcomes at 4, 6, and 8 weeks but not by 6 months when compared with static splinting.[2]

Dynamic splinting and static progressive stretch devices have both been applied at the elbow in isolation and in comparison to one another. Gallucci and colleagues (2004) looked at a sample of 30 patients who were at least 78 days after surgery or trauma who had a functional arc of movement of less than 100 degrees at the elbow. They found that 2/3 of patients were able to achieve at least a 100 degree arc and therefore, improved function after using a dynamic splint for 75 days.[3] In a randomized controlled pilot study of 30 patients, Lai and colleagues (2009) found significant improvements in ROM when dynamic splinting was added to the control treatment of botulinum toxin type-A and occupational therapy treatment.[4] Bhat and colleagues (2010) and Gelinas and colleagues (2000) found similar benefit to SPS at the elbow.[5,6] In both cases, SPS was introduced to the patient approximately 4.5 to 5 months after injury or surgery and once improvements from therapy were stagnant. A functional ROM or arc of movement was achieved in 19 out of 30 patients and 11 out of 22 patients respectively.[5,6] Doomberg and colleagues (2006) also demonstrated improvements with ROM overall after SPS intervention but noted that early splinting after the initial injury rather than after elbow encapselectomy yielded greater results.[7] Lindenhovius and colleagues (2012) performed a prospective randomized controlled trial looking at the benefit of dynamic splinting versus SPS in improving range of motion and function as measured by the Disabilities of the Arm, Shoulder, and Hand (DASH).[8] No significant difference was found between the two groups prior to treatment or after 3, 6 or 12 month follow-ups. Veltman and colleagues (2015) completed a systematic review on the topic that included the results form 232 patients with a similar outcome showing that each device was beneficial but that one was not more effective than the other.[9]

At the knee and wrist, dynamic splinting has been identified as beneficial when further progression of range of motion is needed after surgery or an injury. Pace and colleagues (2018) performed a Level IV retrospective study, looking at the implementation of dynamic splinting following knee surgery in 74 adolescents and children who had ROM deficits in flexion, extension, or both directions.[10] 84% of the patients experienced a significant increase in ROM and 58% were able to avoid further surgical intervention. Willis and colleagues (2016) looked at the treatment of carpal tunnel syndrome using dynamic splinting at the wrist.[11] They performed a randomized control trial where the experimental group was provided with dynamic splinting in addition to anti-inflammatories and a stretching program. Those patients who received dynamic splinting in addition to the other treatments had a significant decline in the need for surgical intervention after conservative management was complete. Similarly, Glasgow and colleagues (2011) and Shah and colleagues (2002) looked at the effect of dynamic splinting at the hand and forearm respectively and demonstrated improvements in range of motion after injury in both areas.[12.13]

Although limited, high-level evidence still exists to address the efficacy of LLPS and SPS interventions, a current review of the literature supports the medical necessity of the current clinical policy. A variety of randomized control trials, observational studies, case series, and medical community acceptance confirms the benefits of dynamic LLPS devices at the knee, elbow, wrist, and fingers and SPS devices at the elbow when used to relieve persistent joint stiffness that can occur after injury or surgery.

While additional evidence is emerging, there is insufficient evidence in the published peer-reviewed literature to support the use of dynamic LLPS at other joints to include the foot, ankle, and shoulder or SPS devices at any joint other than the elbow. There is insufficient evidence in the published medical literature to demonstrate the safety, efficacy, and long-term outcomes on the use of patient-actuated serial stretch (PASS) devices.

Coding Implications

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HCPCS Codes considered medically necessary when meeting policy criteria

HCPCS Codes	Description
E1825	Dynamic adjustable finger extension/flexion device, includes soft interface material

ICD-10-CM Diagnosis Codes that Support Coverage Criteria

ICD-10-CM Code	Description
M24.541 – M24.549	Contracture, hand
M25.641 - M25.649	Stiffness of hand, not elsewhere classified
M84.441S	Pathological fracture, right hand, sequela
M84.442S	Pathological fracture, left hand, sequela
M84.443S	Pathological fracture, unspecified hand, sequela
M84.444S	Pathological fracture, right finger(s), sequela
M84.445S	Pathological fracture, left finger(s), sequela
M84.446S	Pathological fracture, unspecified finger(s), sequela
S61.001A - S61.459S	Open wound of fingers and hands
S62.201A - S62.92XS	Fracture of hand
S63.101A - S63.106S	Unspecified subluxation and dislocation of thumb
S63.111A - S63.116S	Subluxation and dislocation of metacarpophalangeal joint of thumb
S63.121A - S63.126S	Subluxation and dislocation of unspecified interphalangeal joint of thumb
S63.200A - S63.209S	Unspecified subluxation of other finger
S63.210A - S63.219S	Subluxation of metacarpophalangeal joint of finger
S63.220A - S63.229S	Subluxation of unspecified interphalangeal joint of finger
S63.230A - S63.239S	Subluxation of proximal interphalangeal joint of finger
S63.240A - S63.249S	Subluxation of distal interphalangeal joint of finger
S63.250A - S63.259S	Unspecified dislocation of other finger
S63.260A - S63.269S	Dislocation of metacarpophalangeal joint of finger
S63.270A - S63.279S	Dislocation of unspecified interphalangeal joint of finger
S63.280A - S63.289S	Dislocation of proximal interphalangeal joint of finger
S63.290A - S63.299S	Dislocation of distal interphalangeal joint of finger
S66.001A - S66.009S	Unspecified injury of long flexor muscle, fascia and tendon of thumb at wrist and hand level
S66.011A - S66.019S	Strain of long flexor muscle, fascia, and tendon of thumb at wrist and hand level
S66.021A - S66.029S	Laceration of long flexor muscle, fascia, and tendon of thumb at wrist and hand level
S66.091A - S66.099S	Other specified injury of long flexor muscle, fascia, and tendon of thumb at wrist and hand level
S66.100A - S66.109S	Unspecified injury of flexor muscle, fascia and tendon of right index finger at wrist and hand level
S66.110A - S66.119S	Strain of flexor muscle, fascia, and tendon of other and unspecified finger at wrist and hand level
S66.120A - S66.129S	Laceration of flexor muscle, fascia, and tendon of other and unspecified finger at wrist and hand level
S66.190A – S66.199S	Other injury of flexor muscle, fascia, and tendon of other and unspecified finger at wrist and hand level
S66.201A - S66.209S	Unspecified injury of extensor muscle, fascia and tendon of thumb at wrist and hand level

ICD-10-CM Code	Description
S66.211A - S66.219S	Strain of extensor muscle, fascia and tendon of thumb at wrist and hand level
S66.221A -S66.229S	Laceration of extensor muscle, fascia and tendon of thumb at wrist and hand level
S66.291A - S66.299S	Other specified injury of extensor muscle, fascia and tendon of thumb at wrist and hand level
S66.300A - S66.309S	Unspecified injury of extensor muscle, fascia and tendon of other and unspecified finger at wrist and hand level
S66.310A - S66.319S	Strain of extensor muscle, fascia and tendon of other and unspecified finger at wrist and hand level
S66.320A - S66.329S	Laceration of extensor muscle, fascia and tendon of other and unspecified finger at wrist and hand level
S66.390A - S66.399S	Other injury of extensor muscle, fascia and tendon of other and unspecified finger at wrist and hand level
S66.401A - S66.499S	Injury of intrinsic muscle, fascia and tendon of thumb at wrist and hand level
S66.500A - S66.599S	Injury of intrinsic muscle, fascia and tendon of other and unspecified finger at wrist and hand level
S67.00XA - S67.92XS	Crushing injury of wrist, hand and fingers

HCPCS Codes considered NOT medically necessary per this policy

HCPCS Codes	Description
E1399	Durable medical equipment, miscellaneous
E1806	Static progressive stretch wrist device, flexion and/or extension, with or without range of motion adjustment, includes all components and accessories
E1811	Static progressive stretch knee device, extension and/or flexion, with or without range of motion adjustment, includes all components and accessories
E1815	Dynamic adjustable ankle extension/flexion device, includes soft interface material
E1816	Static progressive stretch ankle device, flexion and/or extension, with or without range of motion adjustment, includes all components and accessories
E1818	Static progressive stretch forearm pronation/supination device, with or without range of motion adjustment, includes all components and accessories
E1830	Dynamic adjustable toe extension/flexion device, includes soft interface material
E1831	Static progressive stretch toe device, extension and/or flexion, with or without range of motion adjustment, includes all components and accessories
E1840	Dynamic adjustable shoulder flexion/abduction/rotation device, includes soft interface material
E1841	Static progressive stretch shoulder device, with or without range of motion adjustment, includes all components and accessories

Reviews, Revisions, and Approvals	Date	Approval Date
Policy developed	04/17	04/17
References reviewed and updated. Codes updated.	03/18	03/18
Removed the following codes from being not medically necessary: E1800, E1801, E1802, E1805, E1810, E1812. Clarified in policy/criteria the joints for which devices are not medically necessary.	03/19	04/19
Added code E1399 as not medically necessary	06/19	

References

1. Kitis A, Ozcan RH, Bagdatli D, et al. Comparison of static and dynamic splinting regimens for extensor tendon repairs in zones V to VII. Plast Surg Hand Surg. 2012 Sep;46(3-4):267-71
2. Mowlavi A, Burns M, Brown RE. Dynamic versus static splinting of simple zone V and zone VI extensor tendon repairs: a prospective, randomized, controlled study. Plast Reconstr Surg. 2005 Feb;115(2):482-7
3. Gallucci GL, Boretto JG, Davalos MA, Alfie VA, Donndorff A, De CP (2014) The use of dynamic orthoses in the treatment of the stiff elbow. Eur J Orthop Surg Traumatol 24:1395–1400
4. Lai JM, Francisco GE, Willis FB. Dynamic splinting after treatment with botulinum toxin type-A: a randomized controlled pilot study. Adv Ther. 2009 Feb;26(2):241-8.
5. Bhat AK, Bhaskaranand K, Nair SG (2010) Static progressive stretching using a turnbuckle orthosis for elbow stiffness: a prospective study. J Orthop Surg (Hong Kong) 18:76–79
6. Gelinas JJ, Faber KJ, Patterson SD, King GJ (2000) The effectiveness of turnbuckle splinting for elbow contractures. J Bone Joint Surg Br 82:74–78
7. Doornberg JN, Ring D, Jupiter JB. Static progressive splinting for posttraumatic elbow stiffness. J Orthop Trauma. 2006 Jul:20(6):400-4
8. Lindenhovius AL, Doomberg JN, Brouwer KM, Jupiter JB, Mudgal CS, Ring D. A prospective randomized controlled trial of dynamic versus static progressive elbow splinting for posttraumatic elbow stiffness. J Bone Joint Surg Am. 2012 Apr 18:94(8):694-700.
9. Veltman ES, Doornberg JN, Eygendaal D, van den Bekerom MP. Static progressive versus dynamic splinting for posttraumatic elbow stiffness: a systematic review of 232 patients. Arch Orthop Trauma Surg. 2015 May;135(5):613-7. Pace JL. Nasreddine AY. Simoni M. et al. Dynamic splinting in children and adolescents with stiffness after knee surgery. J Pediatr Orthop. 2018 Jan:38(1):38-43.
10. Willis FB, Fowler B. Longitudinal Outcomes Following a Randomized Controlled Trial of Dynamic Splint Stretching for Carpal Tunnel Syndrome. Hand (N Y). 2016 Sep;11(3):290-294.
11. Glasgow C, Tooth LR, Fleming J, Peters S. Dynamic splinting for the stiff hand after trauma: predictors of contracture resolution. J Hand Ther. 2011;24(3):195-206.
12. Shah MA[1], Lopez JK, Escalante AS, Green DP. Dynamic splinting of forearm rotational contracture after distal radius fracture. J Hand Surg Am. 2002 May;27(3):456-63.
13. Hayes Medical Technology Directory. Mechanical Stretching Device for the Treatment of Joint Contractures of the Extremities. Feb 2013. Update Jan 2017

14. Sameem M, Wood T, Ignacy T, et al. A systematic review of rehabilitation protocols after surgical repair of the extensor tendons in zones V-VIII of the hand. J Hand Ther. 2011 Oct-Dec;24(4):365-72
15. Neuhaus V, Wong G, Russo KE, Mudgal CS. Dynamic splinting with early motion following zone IV/V and TI to TIII extensor tendon repairs. J Hand Surg Am. 2012 May;37(5):933-7.
16. Chester DL, Beale S, Beveridge L, Nancarrow JD, Titley OG. A prospective, controlled, randomized trial comparing early active extension with passive extension using a dynamic splint in the rehabilitation of repaired extensor tendons. J Hand Surg Br. 2002;27(3):283-288.
17. Giessler GA, Przybilski M, Germann G, Sauerbier M, Megerle K. Early free active versus dynamic extension splinting after extensor indicis proprius tendon transfer to restore thumb extension: a prospective randomized study. J Hand Surg Am. 2008;33(6):864-868
18. 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 Jul 21;9:104. doi: 10.1186/1471-2474-9-104.
19. Khandwala AR, Webb J, Harris SB, et al. A comparison of dynamic extension splinting and controlled active mobilization of complete divisions of extensor tendons in zones 5 and 6. J Hand Surg Br. 2000 Apr;25(2):140-6.
20. Walsh MT, Rinehimer W, Muntzer E et al. Early controlled motion with dynamic splinting versus static splinting for zones III and IV extensor tendon lacerations: a preliminary report. J Hand Ther. 1994 Oct-Dec;7(4):232-6.
21. Saldana MJ, Choban S, Westerbeck P, Schacherer TG. Results of acute zone III extensor tendon injuries treated with dynamic extension splinting. J Hand Surg Am. 1991 Nov;16(6):1145-50.
22. Griffin M, Hindocha S, Jordan D, et al. Management of Extensor Tendon Injuries. Open Orthop J. 2012; 6: 36–42.
23. Furia JP, Willis FB, Shanumgam R, Curran SA. Systematic review of contracture reduction in the lower extremity with dynamic splinting. Adv Ther. 2013;30(8):763-770.
24. Jongs RA, Harvey LA, Gwinn T, et al. Dynamic splints do not reduce contracture following distal radial fracture: a randomised controlled trial. J Physiother. 2012;58 (3):173-180.

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. “Health Plan” means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan’s affiliates, as applicable.

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