

Ankle-Foot Orthoses (AFOs), Knee-Ankle-Foot Orthoses (KAFOs), and Hip-Knee-Ankle-Foot Orthoses (HKAFOs)

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Introduction

Lower extremity orthoses (braces) covered in this guideline include: ankle-foot orthoses (AFOs), knee-ankle-foot orthoses (KAFOs), and hip-knee-ankle-foot orthoses (HKAFOs).

Health Equity Consideration

Health equity is the highest level of health for all individuals; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which individuals are born, grow, live, work, and age. Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include the following: safe housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

Criteria

Non-ambulatory or Minimally Ambulatory Individuals:

A static or dynamic positioning ankle-foot orthosis (AFO) (HCPCS) L4396, L4397, L4392) is considered medically necessary for a non-ambulatory or minimally ambulatory individual if **either** of the following apply:

- There is documentation of **all** of the following:
 - The individual has a plantar flexion contracture, which causes the foot to point either forward or downward due to tight muscles and tendons.
 - The individual has at least 10 degrees of upward movement at the ankle, which indicates it is possible to correct the non-fixed contracture.
 - The contracture is causing or is projected to cause disruption to the individual's function or the condition of their skin.

- The static or dynamic positioning AFO brace is used in conjunction with an active stretching program for the affected muscles and/or tendons.
- The individual has plantar fasciitis.

Ambulatory Individuals

A pre-fabricated ankle-foot orthosis (AFO) (HCPCS L1902, L1906, L1910, L1930, L1932, L1933, L1951, L1952, L1971, L1972, L2112, L2114, L2116, L4350, L4360, L4361, L4386, L4387) is considered medically necessary in an ambulatory individual when **all** of the following apply:

- The individual can walk, but they encounter muscular weakness or structural abnormalities in the lower extremities, specifically the foot and/or ankle.
- Stabilizing the individual's foot and/or ankle is necessary for medical reasons.
- The individual's function will be improved by using the brace.

A pre-fabricated knee-ankle-foot orthosis (KAFO) (HCPCS L2035, L2132, L2134, L2136, L4370) is considered medically necessary in an ambulatory individual when **all** of the following apply:

- The individual can walk, but they have muscular weakness or structural abnormalities in the lower extremities, specifically the foot and/or ankle.
- Stabilizing the individual's knee in addition to the foot and/or ankle is necessary for medical reasons.
- The individual's function will be improved by using the brace.

A pre-fabricated hip-knee-ankle-foot orthosis (HKAFO) (HCPCS L2040, L2050, L2060, L2070, L2080, L2090) is considered medically necessary for an ambulatory individual when the individual meets criteria for a custom-fabricated orthosis and **all** of the following apply:

- The individual has hip weakness or deformity.
- Stabilizing the individual's hip in addition to the knee, foot and/or ankle is necessary for medical reasons.
- The individual's function will be improved by using the brace.

A custom ankle-foot orthosis (AFO), knee-ankle-foot orthosis (KAFO), or hip-knee-ankle-foot orthosis (HKAFO) (HCPCS L1900, L1904, L1907, L1920, L1940, L1945, L1950, L1960, L1970, L1980, L1990, L2000, L2005, L2010, L2020, L2030, L2034, L2036, L2037, L2038, L2040, L2050, L2060, L2070, L2080, L2090, L2106, L2108, L2126, L2128, L4631) is considered medically necessary in an ambulatory individual when the basic criteria listed above for the AFO, KAFO, or HKAFO are met and **any** of the following criteria apply:

- The individual is unable to be fitted with a pre-made brace.

- The condition requiring the brace is anticipated to be permanent or of long-standing duration beyond six months.
- It is necessary to manage the movement of the knee, ankle, and/or foot in several directions.
- The individual has a medical condition that necessitates the creation of a custom-made brace to avoid damage to the tissues.
- The individual has a fractured bone that is mending, but the shape of the bone is not typical, and the brace will help stabilize the bone.

Replacement Criteria

- Same or Similar Durable Medical Equipment
 - Duplication of the same or similar orthoses within the same case is not medically necessary.
- A replacement orthosis is medically necessary when **all** of the following apply:
 - The individual has been seen recently by their provider and has a documented care plan that includes the use of the brace.
 - There is clinical documentation of **any** of the following:
 - The individual is no longer able to wear the brace because of growth or a change in physical condition.
 - The brace has been lost or stolen.
 - The brace is broken, unable to be repaired, and no longer under warranty

Not Medically Necessary

- Additions to AFOs, KAFOs, or HKAFOs are considered not medically necessary if either the base orthosis is not medically necessary, or the specific addition is not medically necessary.
- AFOs, KAFOs, or HKAFOs and any related addition are considered not medically necessary when used solely for the treatment of edema and/or for the prevention or treatment of a heel pressure ulcer in ambulatory individuals.
- A foot drop splint/recumbent positioning device (HCPCS L4398) or replacement interface (HCPCS L4394) will be denied as not reasonable and necessary in an individual with foot drop who is nonambulatory because there are other more appropriate treatment modalities. The treatment plan is based on the etiology of the foot drop and the localization of the lesion. Potential treatment options may include but are not limited to: splinting and braces used in conjunction with physical therapy to maintain the foot in a neutral position during ambulation, functional electrical stimulation, botulinum toxin, or surgical intervention for preservation of nerve function.

- Tape and wrapping do not meet the durability requirement for covered durable medical equipment (DME), in that they are not reusable and are not made to withstand prolonged use.
- AFOs and KAFOs are not considered medically necessary treatment of disease when used to prevent injury. In these cases, the use is deemed solely preventive, and therefore is considered not medically necessary treatment of a disease or injury.
- Ankle-foot orthoses (AFOs) are considered experimental, investigational, or unproven for treatment of osteoarthritis of the knee because their effectiveness for this indication has not been established.
- Elastic or other fabric support garments (HCPCS A4467) with or without stays or panels do not meet the definition of a brace because they are not rigid or semi-rigid devices.

Evidence Discussion

Hayashi et al. (2024) evaluated how quadriceps muscle activity during walking with a KAFO related to improvements in gait ability in 50 acute hemiplegic stroke individuals who could not walk with an AFO. Surface electromyography recorded activity in the paretic rectus femoris, biceps femoris, tibialis anterior, and soleus at the start of gait training and again when the Ambulation Independence Measure score improved by 3 points or at discharge. Even individuals with complete hemiplegia demonstrated periodic activation in the paretic rectus femoris, biceps femoris, and soleus during walking. Twenty-three individuals progressed to an Ambulation Independence Measure score of 3 or higher and were able to walk with an AFO. At baseline, paretic rectus femoris activity during the first double limb support phase was significantly higher in the good recovery group compared with the poor recovery group, and rectus femoris activity increased significantly from before to after the acute rehabilitation program. These findings suggested that early activation and strengthening of the paretic quadriceps during KAFO assisted walking played an important role in promoting gait recovery in individuals with severe hemiplegic gait disturbance.

A 2021 systematic review and meta-analysis reported by Choo and Chang examined the effectiveness of AFO use in improving gait biomechanical parameters such as walking speed, mobility, and kinematics in post-stroke individuals with gait disturbance. A total of 19 studies, including 434 subjects, which reported on the immediate or short-term effectiveness of AFO use were included in the analysis. The data indicated that AFO use improved walking speed, cadence, step length, and stride length, most notably in post-stroke individuals. Thus, the authors concluded

that an AFO is considered beneficial in enhancing gait stability and ambulatory ability in post-stroke individuals.

A 2021 study performed by Barkocy et al. examined the effectiveness of serial casting and AFOs in five children with autism spectrum disorder who toe walk. Five participants increased passive range of motion with serial casting. In addition, following serial casting two of four participants regained near typical ankle dorsiflexion. Following six months of AFO use, all five participants improved ankle dorsiflexion during walking. Thus, the authors recommended serial casting followed by AFO use as a potential intervention for children with autism spectrum disorder who toe walk.

Aboutorabi et al. (2017) conducted a systematic review to determine the effectiveness of treatment with various types of AFOs on gait pattern in cerebral palsy (CP). Seventeen studies (four randomized controlled trials) investigating a total of 1,139 children with CP wearing the following AFOs: hinged (HAFO), solid (SAFO), floor reaction, posterior leaf spring, and dynamic. The authors reported that the HAFO improved stride length, speed of walking, single limb support and gait symmetry, and decreased energy expenditure with hemiplegic CP as compared with the barefoot condition. Moreover, in participants with diplegic CP, the HAFO and SAFO improved gross motor function. Thus, the authors concluded that the available evidence demonstrated that use of an HAFO or SAFO improved motor function in children with CP.

Tyson and Kent (2013) performed a systematic review and meta-analysis to determine the effectiveness of an AFO on mobility, walking, and balance in post-stroke individuals. Thirteen randomized trials with 334 participants were selected. The authors reported a significant and beneficial effect of AFO use on walking and balance. The effect on postural sway and timed mobility tests was not significant, and the effect on functional balance was mixed. Thus, the investigators concluded that an AFO can improve walking and balance after stroke. However, the authors noted that further research is needed regarding long-term usage.

Codes Addressed in This Guideline

The inclusion of any code in this table does not imply that the code is under management or requires prior authorization. Refer to the applicable health plan for management details. Prior authorization of a code listed in this table is not a guarantee of payment. The Certificate of Coverage or Evidence of Coverage policy outlines the terms and conditions of the member's health insurance policy.

HCP	Description
A4467	Belt, strap, sleeve, garment, or covering, any type
E1815	Dynamic adjustable ankle extension/flexion device, includes soft interface material
L1900	Ankle foot orthosis, spring wire, dorsiflexion assist calf band, custom fabricated
L1902	Ankle orthosis, ankle gauntlet or similar, with or without joints, prefabricated, off-the-shelf
L1904	Ankle orthosis, ankle gauntlet or similar, with or without joints, custom fabricated
L1906	Ankle foot orthosis, multiligamentous ankle support, prefabricated, off-the-shelf
L1907	Ankle orthosis, supramalleolar with straps, with or without interface/pads, custom fabricated
L1910	Ankle foot orthosis, posterior, single bar, clasp attachment to shoe counter, prefabricated, includes fitting and adjustment
L1920	Ankle foot orthosis, single upright with static or adjustable stop (Phelps or Perlstein type), custom fabricated
L1930	Ankle foot orthosis, plastic or other material, prefabricated, includes fitting and adjustment
L1932	Ankle foot orthosis, rigid anterior tibial section, total carbon fiber or equal material, prefabricated item that has been trimmed, bent, molded, assembled, or otherwise customized to fit a specific patient by an individual with expertise
L1933	Ankle foot orthosis, rigid anterior tibial section, total carbon fiber or equal material, prefabricated, off-the-shelf
L1940	Ankle foot orthosis, plastic or other material, custom fabricated
L1945	Ankle foot orthosis, plastic, rigid anterior tibial section (floor reaction), custom fabricated

HCP	Description
L1950	Ankle foot orthosis, spiral, (institute of rehabilitative medicine type), plastic, custom fabricated
L1951	Ankle foot orthosis, spiral, (institute of rehabilitative medicine type), plastic or other material, prefabricated item that has been trimmed, bent, molded, assembled, or otherwise customized to fit a specific patient by an individual with expertise
L1952	Ankle foot orthosis, spiral, (institute of rehabilitative medicine type), plastic or other material, prefabricated, off-the-shelf
L1960	Ankle foot orthosis, posterior solid ankle, plastic, custom fabricated
L1970	Ankle foot orthosis, plastic with ankle joint, custom fabricated
L1971	Ankle foot orthosis, plastic or other material with ankle joint, with or without dorsiflexion assist, prefabricated, includes fitting and adjustment
L1972	Ankle foot orthosis, plastic or other material with ankle joint, with or without dorsiflexion assist, prefabricated, off-the-shelf
L1980	Ankle foot orthosis, single upright free plantar dorsiflexion, solid stirrup, calf band/cuff (single bar 'bk' orthosis), custom fabricated
L1990	Ankle foot orthosis, double upright free plantar dorsiflexion, solid stirrup, calf band/cuff (double bar 'bk' orthosis), custom fabricated
L2000	Knee ankle foot orthosis, single upright, free knee, free ankle, solid stirrup, thigh and calf bands/cuffs (single bar 'ak' orthosis), custom fabricated
L2005	Knee ankle foot orthosis, any material, single or double upright, stance control, automatic lock and swing phase release, any type activation, includes ankle joint, any type, custom fabricated
L2010	Knee ankle foot orthosis, single upright, free ankle, solid stirrup, thigh and calf bands/cuffs (single bar 'ak' orthosis), without knee joint, custom fabricated
L2020	Knee ankle foot orthosis, double upright, free ankle, solid stirrup, thigh and calf bands/cuffs (double bar 'ak' orthosis), custom fabricated

HCPCS	Description
L2030	Knee ankle foot orthosis, double upright, free ankle, solid stirrup, thigh and calf bands/cuffs, (double bar 'ak' orthosis), without knee joint, custom fabricated
L2034	Knee ankle foot orthosis, full plastic, single upright, with or without free motion knee, medial lateral rotation control, with or without free motion ankle, custom fabricated
L2035	Knee ankle foot orthosis, full plastic, static (pediatric size), without free motion ankle, prefabricated, includes fitting and adjustment
L2036	Knee ankle foot orthosis, full plastic, double upright, with or without free motion knee, with or without free motion ankle, custom fabricated
L2037	Knee ankle foot orthosis, full plastic, single upright, with or without free motion knee, with or without free motion ankle, custom fabricated
L2038	Knee ankle foot orthosis, full plastic, with or without free motion knee, multi-axis ankle, custom fabricated
L2040	Hip knee ankle foot orthosis, torsion control, bilateral rotation straps, pelvic band/belt, custom fabricated
L2050	Hip knee ankle foot orthosis, torsion control, bilateral torsion cables, hip joint, pelvic band/belt, custom fabricated
L2060	Hip knee ankle foot orthosis, torsion control, bilateral torsion cables, ball bearing hip joint, pelvic band/ belt, custom fabricated
L2070	Hip knee ankle foot orthosis, torsion control, unilateral rotation straps, pelvic band/belt, custom fabricated
L2080	Hip knee ankle foot orthosis, torsion control, unilateral torsion cable, hip joint, pelvic band/belt, custom fabricated
L2090	Hip knee ankle foot orthosis, torsion control, unilateral torsion cable, ball bearing hip joint, pelvic band/ belt, custom fabricated
L2106	Ankle foot orthosis, fracture orthosis, tibial fracture cast orthosis, thermoplastic type casting material, custom fabricated

HCP	CS	Description
L2108		Ankle foot orthosis, fracture orthosis, tibial fracture cast orthosis, custom fabricated
L2112		Ankle foot orthosis, fracture orthosis, tibial fracture orthosis, soft, prefabricated, includes fitting and adjustment
L2114		Ankle foot orthosis, fracture orthosis, tibial fracture orthosis, semi-rigid, prefabricated, includes fitting and adjustment
L2116		Ankle foot orthosis, fracture orthosis, tibial fracture orthosis, rigid, prefabricated, includes fitting and adjustment
L2126		Knee ankle foot orthosis, fracture orthosis, femoral fracture cast orthosis, thermoplastic type casting material, custom fabricated
L2128		Knee ankle foot orthosis, fracture orthosis, femoral fracture cast orthosis, custom fabricated
L2132		KAFO, fracture orthosis, femoral fracture cast orthosis, soft, prefabricated, includes fitting and adjustment
L2134		KAFO, fracture orthosis, femoral fracture cast orthosis, semi-rigid, prefabricated, includes fitting and adjustment
L2136		KAFO, fracture orthosis, femoral fracture cast orthosis, rigid, prefabricated, includes fitting and adjustment
L2999		Lower extremity orthoses, not otherwise specified
L4350		Ankle control orthosis, stirrup style, rigid, includes any type interface (e.g., pneumatic, gel), prefabricated, off-the-shelf
L4360		Walking boot, pneumatic and/or vacuum, with or without joints, with or without interface material, prefabricated item that has been trimmed, bent, molded, assembled, or otherwise customized to fit a specific patient by an individual with expertise
L4361		Walking boot, pneumatic and/or vacuum, with or without joints, with or without interface material, prefabricated, off-the-shelf

HCP	Description
L4370	Pneumatic full leg splint, prefabricated, off-the-shelf
L4386	Walking boot, non-pneumatic, with or without joints, with or without interface material, prefabricated item that has been trimmed, bent, molded, assembled, or otherwise customized to fit a specific patient by an individual with expertise
L4387	Walking boot, non-pneumatic, with or without joints, with or without interface material, prefabricated, off-the-shelf
L4392	Replacement, soft interface material, static AFO
L4394	Replace soft interface material, foot drop splint
L4396	Static or dynamic ankle foot orthosis, including soft interface material, adjustable for fit, for positioning, may be used for minimal ambulation, prefabricated item that has been trimmed, bent, molded, assembled, or otherwise customized to fit a specific patient by an individual with expertise
L4397	Static or dynamic ankle foot orthosis, including soft interface material, adjustable for fit, for positioning, may be used for minimal ambulation, prefabricated, off-the-shelf
L4398	Foot drop splint, recumbent positioning device, prefabricated, off-the-shelf
L4631	Ankle foot orthosis, walking boot type, varus/valgus correction, rocker bottom, anterior tibial shell, soft interface, custom arch support, plastic or other material, includes straps and closures, custom fabricated

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