# HOW LOWER LIMB AMPUTEES CAN BENEFIT FROM ACTIVE DORSIFLEXION

## Introduction

It has been continuously documented that trips and falls can lead to injury, particularly after age 65. In the lower limb amputee community, there is an even greater risk of occurrences. Prosthetic feet with designs that implement active dorsiflexion can reduce this risk by raising the minimum toe clearance of a prosthetic device during swing phase. Understanding the benefits of active dorsiflexion will aid prosthetists in selecting the ideal foot to meet their patient's needs.

## Definition of L5968

| HCPCS CODE | DEFINITION |
|---|---|
| L5968 | ADDITION TO LOWER LIMB PROTHESIS, MULTIAXIAL ANKLE WITH SWING PHASE ACTIVE DORSIFLEXION FEATURE |

## Potential Benefits to Patients

### What does active dorsiflexion mean to your patients?

Amputees are among those most common to have trip and fall accidents due to risk factors of lower body weakness, compromised balance, medicinal use, and foot pain or poor footwear.[1,2]

The likelihood of injury requiring an ER visit and/or hospitalization due to a fall is high. In a reported study, 50 percent of amputees reported a fall over the course of a year![3] The expenses associated with the average fall for a person over age 65 are greater than $30,000. In 2015 the direct medical expense associated with falls exceeded $50 billion![1]

There have been studies linking minimum toe clearance (MTC) to the likelihood of trip and fall incidents. These studies have documented the advantages of increasing minimum toe clearance (MTC) to reduce the likelihood of tripping.[3,4]

### Managing Minimum Toe Clearance through the application of a hydraulic foot

In a study of active dorsiflexing prostheses, it was found that with a static prosthetic foot, the likelihood of tripping on a 5mm high, unexpected hazard is 1 in every 166 steps. When a foot exhibiting active dorsiflexion was applied, the tripping instance was reduced to 1 in 3,169 steps. An increase in dorsiflexion during midstance (and thereby MTC) has an exponential impact on the reduced likelihood of tripping on an unexpected hazard.

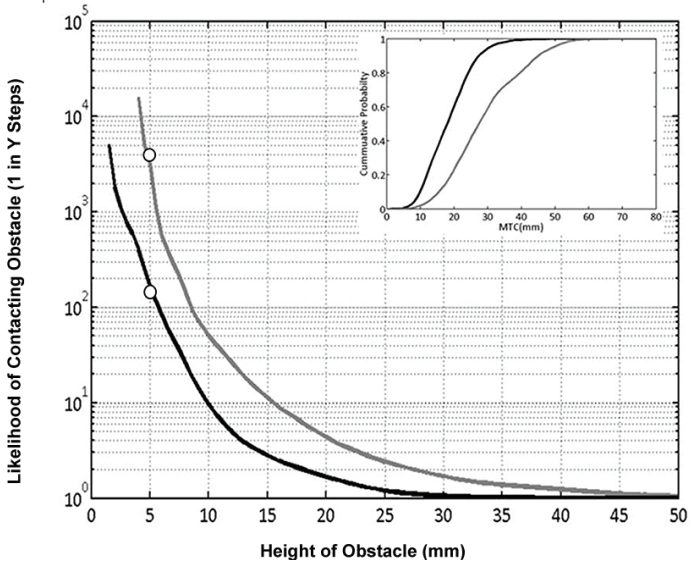


Fig 1

Curves representing likelihood of tripping for two conditions.[3]

One method for increasing MTC is through dorsiflexion of the prosthetic foot during swing phase. This can be achieved with a motor or through hydraulic motion of the ankle joint around an axis. The College Park Odyssey® K2 and Odyssey® K3 feet both demonstrate active dorsiflexion through use of a hydraulic ankle joint.

In the average sized prosthetic foot (26cm), it is estimated that one degree of active dorsiflexion allows for 1/8 inch of MTC. The MTC may be further increased by applying a change to the alignment (dorsiflexing the foot). When a maximum range of five degrees of dorsiflexion is applied, the MTC increases from 1/8 to 3/4 inches.

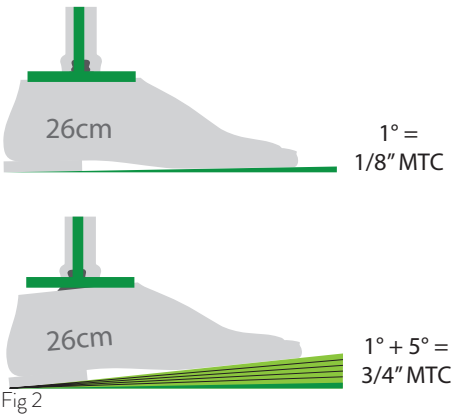


Fig 2

Feet representing MTC for two conditions.



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## Potential savings to Medicare – facts about trips and falls

Direct medical cost from falls is more than $50 billion annually.[1] The majority of the U.S. amputee population is geriatric and suffers from vascular disease.[5] Of this population, one out of three over age 65 fall each year.[1] On average, one out of two amputees fall each year.[3,6,7] Amputation can lead to a reduced ability to recover from tripping over an unexpected hazard, due in part to a lack of proprioception associated with neuropathy acquired through the diabetes disease process, in addition to loss of compensating muscle activity absent due to amputation. Adults over age 55 with amputations resulting from vascular disease are at the highest risk within the amputee population, as they are generally less stable ambulators to begin with.[4] With this information, we can conclude the following:

- Active dorsiflexion may reduce the incidence of tripping accidents.
- Reducing tripping will lessen the probability of falls.
- Reducing falls decreases injuries.
- Reducing injuries minimizes hospitalizations/ER visits.

## Reducing hospital/ER visits reduces cost to Medicare

**$30,000.00**
avg cost of treating a fall for adults age 65+ [1,8]

**-$3,683.00**
avg Medicare reimbursement of L5968[9]

**=$26,317.00**
potential savings to Medicare by preventing **JUST ONE FALL**

## Providing a Letter of Medical Necessity

Payers often require documentation of a patient's history. College Park has prepared sample letters of medical necessity (LMN) for its products to assist in drafting the necessary documentation to support medical necessity for an individual's prostheses. Sample LMNs are available on our website at: www.college-park.com/odysseyK2.

**CAVEAT**: Manufacturers provide letters of medical necessity as samples only, and they should be customized to the individual. **The determination of medical necessity and reasonableness of the type of prosthetic device to meet the patient's functional needs is left to the treating physician and/or prosthetist. Pursuant to Section 1834(h) of the Social Security Act, (42 USC 1395m(h)), documentation created by a prosthetist or orthotists shall be considered part of the individual's medical record.**

## Conclusion

Trips and falls can lead to injuries in older populations and especially for amputees. Selecting a prosthetic foot that exhibits active dorsiflexion can reduce the likelihood of patient trip and fall.

## References


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