(Place on your letterhead)

Date

Recipients' Address

Recipients Name:

This letter is intended to address the denial for approval of prosthetic feet with a vertical loading pylon feature (VLP) and rotational capabilities. These features are not only beneficial to high activity users, but all amputee's who need proximal joint protection, fragile skin relief, as well as a reduction in the jarring force that occurs at each and every step during ambulation.

As your reviewer correctly identified, (patient name) will benefit from durable dynamic response foot that will accommodate his K3-K4 activity level. The proposed RUSH® Foot ___________ (Name of RUSH vertical shock foot with rotation) foot has been engineered to return a high percentage of the energy put into the foot module, while also providing rotational compliance. This provides for a very energy efficient, dynamic foot option. In our attempts to restore (patient name) to a healthy, active lifestyle, these qualities address the need to restore a means of dynamic energy return to his/her ambulation while providing rotational compliance for comfort and stability.

However, in isolation they fail to address the equally important need for some means of shock absorption or force attenuation. Even at self selected walking speeds, weight transfer onto the accepting limb is both rapid and abrupt. For able bodied walkers, the cushioning of these impact and rotational forces is obtained through the various physical properties of biological tissues, including the fat pad of the heel and eccentric contraction of the dorsiflexors of the foot and ankle. Following an amputation, the physiologic shock absorbers are absent. As a result, the impact forces of each step are transferred both directly to the residual limb where they are partially attenuated by sheer forces within the socket, and to more proximal joints where they are experienced as abrupt axial load. Insufficient shock absorption during gait has been attributed to low back pain (1-2), cartilage degeneration (3) and osteoarthritis in the knee and spine (2,4).

Some means of shock absorption within a transtibial prosthesis is believed to be necessary to avoid proximal joint diseases (5) and it has been reasonably suggested that the shock transmitted by a prosthesis should not be higher than the shock transmitted by a normal lower leg (5). Indeed, one of the reasons that amputees adopt a self-selected walking speed slower than their able-bodied peers appears to be to decrease the magnitude of the shock forces to more manageable levels (6). Preliminary research findings demonstrate that the vertical acceleration experienced by an amputee at his comparatively slow self-selected walking speed is similar to that experienced by able bodied subjects at their maximal walking speeds (6).

Studies have demonstrated the ability of prosthetic shock absorbing mechanisms to decrease the axial force transients experienced by amputees by as much as 60% (7). This phenomenon may partially explain why VSP prosthetic feet have demonstrated significant reductions in energy cost, improvements in gait efficiency and reductions in exercise intensity during both walking and running when compared to both SACH and dynamic response prosthetic feet (8). Subjects consistently report a preference for prostheses that utilize a shock absorbing feature, sighting increased comfort, and decreased force applied to the residual limb and decreased pain (7). While these immediate benefits are greatly appreciated by lower extremity amputees, the greater value may be in the long term benefits including reduced trauma to the limb and proximal joints and the ability to increase walking velocities without exceeding a patient's tolerance to axial loads.

The _____________ (Name of RUSH vertical shock foot) has the ability to absorb impact and rotational forces at both normal and elevated walking speeds, creating a healthier socket environment for the residual limb and sparing the axial and rotational loading of proximal joints through the reduction of destructive impact forces. Of equal importance, the non-shock absorbing foot demonstrates little to no movement suggesting that those forces encountered during the abrupt weight transfer of every step are born by residual limb itself in destructive sheer forces and by the proximal joints through axial loads.

Sincerely,

Clinician Name

References:

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