SPRING LOADED ENERGY STORING FOOT

INTRODUCTION:-

When the energy storing mechanism in a foot was introduced in 1983 in the form of Seattle foot, it showered light on a new era of prosthetic foot designs. Since that day continuous effort are being made to exceed in quality and functionality. In the early designs, the energy storing mechanism was a flexible keel that stored energy during the initial gait phase and transfer that energy was transferred to the later gait stages without any further use of the active energy of the amputee. But since then a lot of energy storing modifications has been done both over the keel designs and also the material selection. Though the advancement with the super lightweight and most costly carbon fibres has given better energy storing mechanism but also with that the cost of the foot increased enormously. Not only the cost but also the maintenance and fabrication complexity has increased significantly.

AIM:-

Aim of the study is to design a spring loaded energy storing prosthetic foot for endoskeletal in subjects of trans-tibial prosthesis.

METHODS:-

The energy storing foot is made out of coiled spring which is substitute of wooden/polypropylene keel and attached with nut and volts and foot plate is made out of cow hide leather which is filled with MCR rubber .During loading response the energy is stored and release during push off phase. A spring is taken and cut down according to required length and a washer is welded at both end of the coiled spring.

RESULT:-

Statistical analysis of the quantitative data from the gait analyses yielded inconsistent results between subjects. Two subjects significantly increased their freely selected speed when walking with the spring loaded energy storing foot.

DISCUSSION AND CONCLUSION:-

The spring loaded energy storing foot which is of coiled spring reduces the weight of the prosthesis and helps in shock absorption that is transmitted to the residual limb from the ground during the heel strike on uneven ground. The compression of spring guided by the spring plate act as shock absorber and allow normal gait pattern.

The new design provide Cost efficient, Smooth motion reaction, Good smooth natural gait pattern, Less energy expenditure.

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