SUMMARY
Gait Analysis data allows us to understand the performance of prosthetic feet and to compare that with the sound limb behavior. From bibliography data about the most common feet can be found, but no data are available about the foot named Trias (from Ottobock). We performed a Gait Analysis to analyze the performance of this foot. All this data was used to determine the characteristic of a new prosthetic foot (Roadwalking).

INTRODUCTION
None prosthetic foot available on the market has the same ROM of human sound ankle, and the same propulsive strength. The normal ROM goes from 10° dorsiflexion to 20° plantarflexion. Prosthetic feet like SACH, Carbon Copy II and Seattle Lite have a dorsiflexion much lower (4°-5°), while Trias foot has about 10° and Modular III an higher value (14°): this phase last too long because heel off happened later than all other feet. Plantarflexion is almost 0° in all feet but Trias (5°). None of them gives a push forward and generate the necessary power.

METHODS
We have studied 4 transtibial amputees, that wear prosthesis from more tha 10 years and have good confidence with the device.
We used the SMART Motion Capture System by BTS, 8 IR cameras and 24 marker placed on both prosthetic and sound limb (14 on the prosthesis and 8 just on Trias foot) and one Kistler force platform. The protocol used was the SAFLO one. We made 6 acquisition on each patient, 3 with the sound limb and 3 with the prosthetic foot on the platform.
All Kinematic, kinetic and dynamic data were calculated to analyze the performance of Trias prosthetic foot, and in order to obtain quantitative data on which to base the design of a new prosthetic foot.

RESULTS AND DISCUSSION
The new prosthetic foot in composed by 4 laminates: one inferior laminate, which defines the calcaneus and the forefoot; one posterior laminate, which defines the heel and functions like soleus- Achilles's tendon apparatus; two superior laminates, which define the instep and function like anterior tibialis muscle. During each stance phase at least two laminates work together to provide a full support to the amputee user in his/her daily activities. The Roadwalking foot complies with ISO 10328 but at the same time provide the necessary flexibility to support users during the whole stance phase.