ABSTRACT:
Idiopathic toe-walking (ITW) is a relatively common condition worldwide in children. The severity of the toe walking varies from a gait where the children walk with their heels lifted just off the ground and appear to “bounce” as they walk, to a gait where they balance on the tips of their toes as they walk and the heels are never placed on the ground even when standing still. Idiopathic toe-walkers are diagnosed by excluding all known causes of toe walking including neuromuscular or orthopaedic disorders and physical injuries caused by accidents.

AIM
The aim of the research is to develop special boots with implanted devices for ITW children that would serve as a means for monitoring their gait pattern in their natural environment. I am in the 1st stage of the project where I have developed special boots with accelerometers fitted in the heel. The accelerometers act as sensing devices and measure the acceleration in two directions of motion. The circuit board is positioned in the heel, in such a way that its sensitive axes are in the plane of movement of the leg, that is one in the heel-toe direction (x axis) and the other (y axis) vertical. Side to side movements are unlikely to be of interest. For analysis, the signals from the accelerometer are sampled and recorded onto a handheld oscilloscope which is then interfaced to a PC. The four different gait phases e.g stance phase, push off, swing and the foot strike can be clearly identified from the accelerometer signals. I would be discussing the results of the initial stages of my research and further research plan during the presentation.