

## P15001: Feasibility Testing: Heel Force Sensing

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In order to understand what type of sensor that needs to be used, the force of the foot while walking needs to be understood. During normal locomotion, the pressure of the foot is different in different locations. The University of Hong Kong did a study about a pressure on the foot. The following two figures display this pressure:

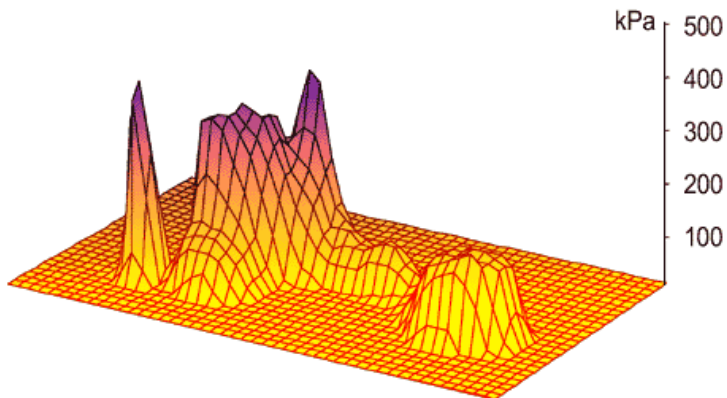


Figure 1: Peak pressure wire frame diagram for a subject during walking

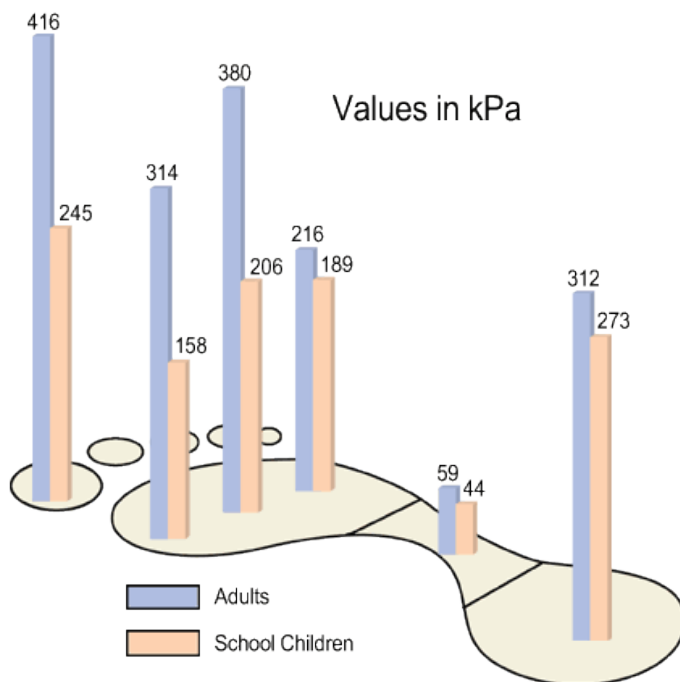





Figure 2: Peak plantar pressures (kPa) from 111 adults and 125 children during walking

From this information, it is clear that the placement of the sensor would have the least force if it is closer to the center of the foot. This benefit needs to be weighted with when that force will be applied (the sensing needs to happen when the heel strike occurs).

Force Sensitive Resistor 0.5"	Load Sensor	Flexiforce Pressure Sensor
		
Force Max: 20 lb.	Force Max: 110 lb.	Force Max: 100 lb.
No added bulk	Added discomfort under foot	No added bulk
\$6.95	\$9.95	\$19.95

Sources:

[http://www.iso.cuhk.edu.hk/weilun/en/hennig/hennig\\_print.html](http://www.iso.cuhk.edu.hk/weilun/en/hennig/hennig_print.html)

<https://www.sparkfun.com/products/9375>

<https://www.sparkfun.com/products/10245>

<https://www.sparkfun.com/products/8685>