Force 3 FAQ

Fitness Technology
21 Bishop St.
Skye SA 5072
Australia
+61 8 8331 9229
Mob: 0418 815 400
www.fittech.com.au

Q1: How is power calculated (horizontal force, vertical, a sum of two?)

A1: Power is calculated as horizontal force (measured at transducer attached to waist belt) multiplied by the instantaneous belt velocity.

Q2: The power shown in the report is a mean of the all power oscillation (due to the intermittence of the pushing phase) or is there any filter?

A2: Correct – mean power over the trial is simply the average of all power measures.

Q3: The work in joules is reported instantaneously or is calculated from power?

A3: Work in joules is calculated as force x distance and summed for each sample.

Query; We are hoping to do some testing of elite athletes and we need a system that will give us a continuous output of work done (most likely in Joules). Basically, we plan to do a timed treadmill test for approximately 60 minutes or a test where a certain work level is reached in the fastest amount of time. During the test, the athlete can manipulate the speed and or grade as they like in order to reach the established goal the fastest. Thus, a display of distance, speed, grade, work, and total work is essential.

Response; Thank you for your email and interest in our products. Our Pacer Performance System is used in elite athlete and rehabilitation settings throughout the world. The software and hardware do not require a Woodway treadmill but do support the Woodway Force, athlete powered treadmill. If you would provide make and model of your existing treadmill and any technical specifications you have then we can assess how easily it will be to interface the Pacer. Our system is designed to operate with athlete powered (non-motorized) treadmills but can also be interfaced with motorized treadmills depending on hardware specifications. Our latest software includes extensive gait analysis features including left to right comparisons for stride time, step length, horizontal and vertical force, work and power. This is proving exceptional for accurate assessment of patient and athlete gait symmetry.

I have inserted responses to your questions below.

Q4: Do we have to use the Woodway treadmill that is pictured on your website or can we use our own?

A4: Pacer system will work with any treadmill that generates a pulse train indicating distance the belt has travelled. If not then sensors can be added to provide this data. Pacer also accepts horizontal and vertical force measures signals if available.

Q5: With this in mind, can we control or output speed, grade, etc from a treadmill of our own into your Pacer Treadmill Software?

A5: Distance and speed can be measured, displayed and reported if a pulse train of 0-5 volts can be generated from the roller of the treadmill. Grade is not currently displayed because non-motorized treadmills do not alter grade to change work rate but for example the Woodway force uses a magnetic particle brake to provide resistance. If an analogue signal from your treadmill can be sourced which varies linearly with grade (e.g. linear potentiometer) then grade can be incorporated into our Pacer System.

Q6: It is my understanding that treadmill work calculations have to have some sort of %Grade and speed to calculate total work. Does your software support this concept?

A6: The Pacer system can measure horizontal force and distance directly and so calculates horizontal Work = F.d This is more valid in terms of athlete performance than using grade and speed as there are few sports that are not played on a level surface. However, if grade and distance analogue signals are available out of your treadmill the Pacer System will use these and calculate work down and power output.

Q7: What are the potential costs for the software alone, treadmill alone, and the complete system?

A7: Fitness Technology is the distributor of the Pacer Performance System. I have copied the managing director, Ian Crossing in this email and he will contact you with pricing.

Q8: Is there a yearly maintenance needed?

A8: Not on the software and USB interface. The treadmill and distance pickup will require regular maintenance.

Q9: I assume there is a routine calibration and if so, is it complex?

A9: Calibration of distance is not required as it is digital. Calibration of horizontal and vertical forces if applicable is required but only involved applying a couple of known weights.