

# Time In Air (Pressure vs Beam)

# Pressure

Pressure mats have pressure sensors built into the bedding of the mat

Once X amount of pressure removed, the time in air calculator will begin

Example: Once 20 lbs of pressure or less is registered after athlete steps on to mat, the timer will begin and stop once 20 pounds or more pressure is registered.

# Beam

The formula of time in air for the beam and pressure mat will be the same (time in air)

Athlete stands in line with beam (disruption of beam). When the athlete leaves the ground, the beam will no longer be disrupted and timer will start. When the feet break the beam again, the timer will stop and jump height will be calculated.

# Differences

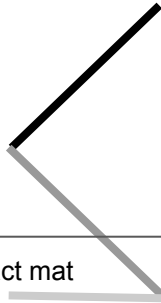
Pressure mats typically register higher jump heights because they do not take into account foot size (typically in line with a measure of “reach”)

When jumping with a pressure mat, it is possible that jump height may start being calculated before your feet have actually left the ground (due to pressure sensitivity) and may stop after your feet have hit the ground (due to pressure sensitivity)

Because of this, foot size is not properly taken into account and depending on the foot size, variability may differ.

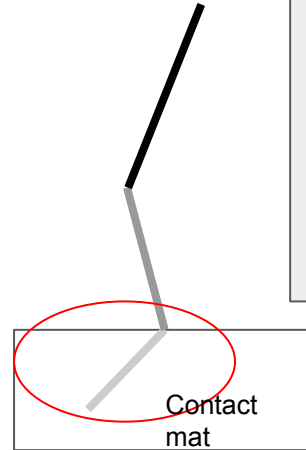
# Pressure

Femur, lower leg  
and foot complex (all  
flexed)



Contact mat

As foot nears toe off,  
sensor may register a  
decrease in pressure  
before foot actually  
leaves the ground. The  
same can happen on  
the landing



Contact  
mat

# Added Inches

**Reach** is a measure of how high someone can touch and take into account more variables than just a displacement score.

Foot size may add inches to jump height. This is one of the issues with a pressure based mat. Athletes may received inflated scores that represent reach (similar to a Vertec) and not jump height (displacement of center of mass).

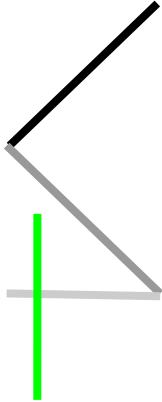
# Benefits of a Beam

When a beam is used, you have to first leave the ground before the beam can be broken. This makes measurements much more reliable across different types of individuals and athletes.

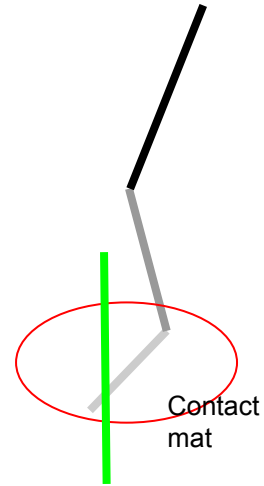
The beam eliminates some of the extraneous variables that may otherwise produce higher jump heights (foot size).

# Beam

Femur, lower leg and foot complex (all flexed). Beam disrupted (timer has not started)



Green line is a representation of the beam



As foot nears toe off, the beam is not broken and the timer will not start until the foot full crosses the beam. The same occurs during landing



# Better Measure?

A beam is a more accurate measure of raw jumping abilities (displacement of the body) while reach can inform you how high someone can touch

For this reason, you may find that beam based devices, or those that measure in a similar manner will produce lower jump heights than those devices that measure reach.

We are not saying one is better than the other, but instead want to clear up any questions that may arise.

# Cons

All jump mats and beam devices suffer from the same universal con of landing mechanics. For obvious reasons, if you land with tucked knees, the jump height will be inflated due to an increase in measured time in air.

Variability can be minimized with practice and consistency in technique