

Force Plates - Do you need one?

It depends entirely on the application of course. Certainly a force plate is standard Biomechanics equipment, where the minutiae of technique are examined in detail. There is an argument for using them combined with linear displacement to monitor jump power to get the most valid result in absolute terms.

In theory this is true if you have an accurate, calibrated, and correctly set up force plate on a flat, level surface. In this case you would be able to produce a power result that is close to the true power of the jump by using position and velocity from the displacement transducer and force from the force plate.

All good in theory, but the trouble is not all force plates are created equal and few, if any will produce reliable results if set up on even slightly uneven ground, or on carpet or other soft surfaces. Good force plates (Kistler, AMTI) cost \$40k or more, and are set up and calibrated by technicians with specialised training.

The current crop of portable force plates are not constructed to anywhere near the same standard of these and so are far more likely to introduce error to power measurements. They are virtually impossible to calibrate for the average user.

A simple test of this is to place one of these plates on floor as you would in testing then step on, take a reading, step off and back on again. The readings should be identical but rarely are. We have seen discrepancies of up to 600 grams with this basic test, these plates are not even fit to be used as scales!

It should also be noted, that force plates are limited to only a very few exercises, jumps, squats hang cleans etc. What do coaches do when they wish to measure exercise such as Bench press, Bench throws, Bench pull, Leg press, Chin-ups, Olympic lifts from the floor etc. Answer - They use linear encoders. The research has shown these to be accurate and valid.

Reliability and Validity of a Linear Position Transducer For Measuring Jump Performance

John B. Cronin, Raewyn D. Hing and Peter J. McNair
Journal of Strength and Conditioning Research, 2004

You also have to ask - "Do I really need to know the absolute power if I just want to simply monitor the state of my athletes from day to day?" A simple, quick, standardised relative measure seems more practical and more appropriate for ongoing monitoring.

