

1080motion



1080 QUANTUM OVERVIEW

MAKE SPEED HAPPEN

1080 QUANTUM

1080 Quantum is a professional grade - yet user-friendly - testing, training, and rehabilitation system. The power lies in the patented technology where an electric motor provides load, resistance modes, and controls speed. This effectively creates a unique ability to safely and independently control load and speed in the concentric and eccentric movement phases while precisely measuring speed, force, and power with real-time feedback.

The 1080 Quantum can be used alone as a single-station cable column or paired with another unit to form a 1080 Syncro, enabling different exercises and increased load. Both configurations feature an intuitive user interface that generates visual feedback from every rep and set. The multitude of resistance types and the range of speed and load settings make the 1080 Quantum equally useful for early rehabilitation strengthening to challenging elite athletes.



Above: 1080 Quantum Single system with 5 meter/16' cable length.

Right: 1080 Quantum Syncro with optional Smith.

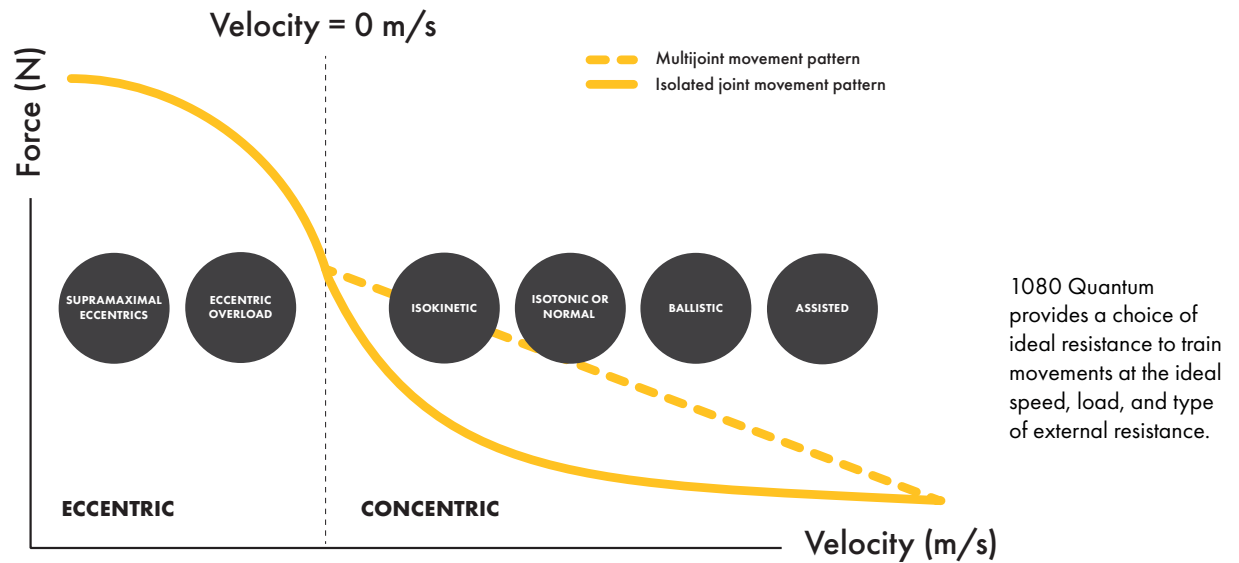


System Specification

1080 Quantum is available in two configurations; Single (1 device) and Syncro (2 devices). Fully equip a Syncro with a Smith machine when needing stability for exercise execution, such as isokinetic squats. The Quantum user application is delivered with each system on a pre-installed touch screen device.

Quantum Single	Quantum Syncro
1-25 kg (2-55 lbs) of continuous concentric load	1-50 kg (2-110 lbs) of continuous concentric load + bar and weights
1-30 kg (2-66 lbs) of continuous eccentric load	1-60 kg (2-132 lbs) of continuous eccentric load + bar and weights
1-50 kg (2-110 lbs) of continuous concentric load with Gear 2	2-100 kg (4-220 lbs) of continuous concentric load + bar and weights with Gear 2
1-60 kg (2-132 lbs) of continuous eccentric load with Gear 2	2-120 kg (4-265 lbs) of continuous eccentric load + bar and weights with Gear 2
Maximum con/ecc load during 3 seconds: 75 kg (165 lbs), 150 kg (331 lbs) with Gear 2	Maximum con/ecc load, with bar/no weights, during 3 seconds: 175 kg (386 lbs), 325 kg (717 lbs) with Gear 2
Concentric velocity: 0.1–8 m/s (0.2-18 mph) Eccentric velocity: 0.1–6 m/s (0.2-13 mph)	Concentric velocity: 0.1–8 m/s (0.2-18 mph) Eccentric velocity: 0.1–6 m/s (0.2-13 mph)
In Gear 2 maximum speed is halved	In Gear 2 maximum speed is halved
Recorded frequency of force, speed and power: 333 Hz	Recorded frequency of force, speed and power: 333 Hz
Tablet with touch screen interface or laptop	Tablet with touch screen interface or laptop
Operating system: Windows 10	Operating system: Windows 10
Weight: 180 kg (400 lbs)	Weight: 180 kg (400 lbs) each
Body height: 1.7 m (5.6 ft)	Body height: 1.7 m (5.6 ft)
Max cable travel: 5 m (16 ft)	Max cable travel: 5 m (16 ft)
Power requirements: 220-240V (US NEMA 6-15)	Power requirements: 220-240V (US NEMA 6-15)

Highlighted Features



Apply eccentric overloading and supramaximal eccentric boost training for hamstring testing and strengthening in the gym (left image). Modified Nordic eccentric hamstring strengthening with assistance provided by 1080 Quantum to complete full movement with proper technique (right image).

LOAD AND SPEED

1080 Quantum offers sports coaches, conditioning specialists, medical professionals, and researchers the opportunity to set both load and speed independent of each other in the concentric and eccentric phase of any movement pattern. The ability to manipulate these fundamental factors to performance is at the very foundation of human performance. This offers the possibility to create highly specific testing and training protocols for rehabilitation, return to play, athletic development, and research purposes.

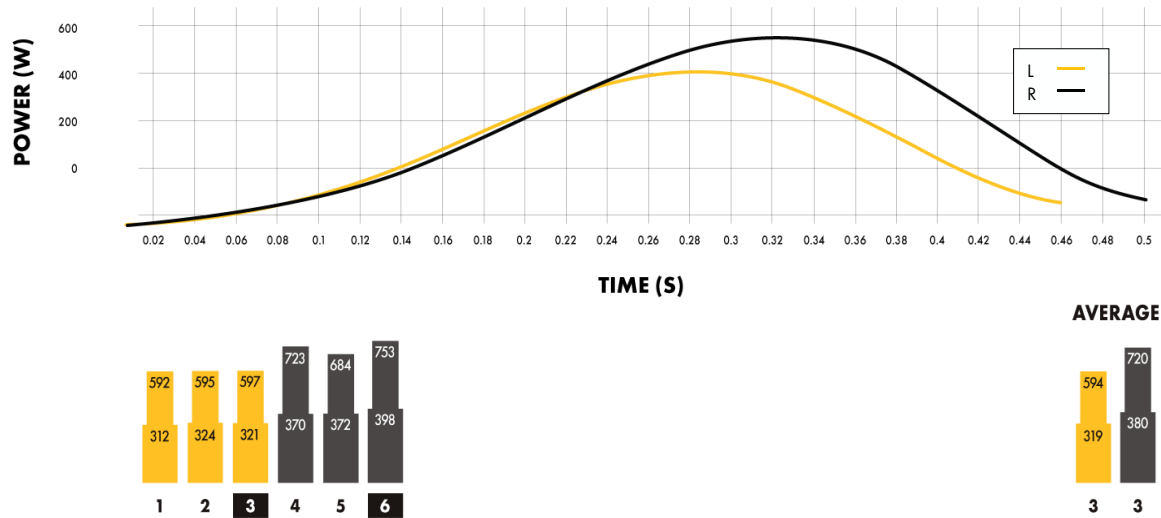
SUPRAMAXIMAL ECCENTRICS

For any movement pattern, a load greater than maximum eccentric (muscle lengthening phase) strength can be imposed. This is safely done using the eccentric boost mode, with the athlete maximally resisting the pull of the cable through the calibrated physiological range. Each repetition then facilitates maximum eccentric force-generating capacity at low speeds.

ECCENTRIC OVERLOADING

In rehabilitation and training, eccentric exercise is an effective strategy to increase muscle strength. When performing eccentric training with the 1080 Quantum, the user can overload the eccentric phase of the movement up to three times greater than the concentric. Eccentric overload can be applied when training movements in any plane of motion to increase strength and power over traditional methods. Eccentric strength is fundamental and necessary to withstand significant forces involved in deceleration ranging from field sports actions to catching one's balance to prevent falls.

SINGLE ARM SHOULDER PRESS - CONCENTRIC POWER TEST

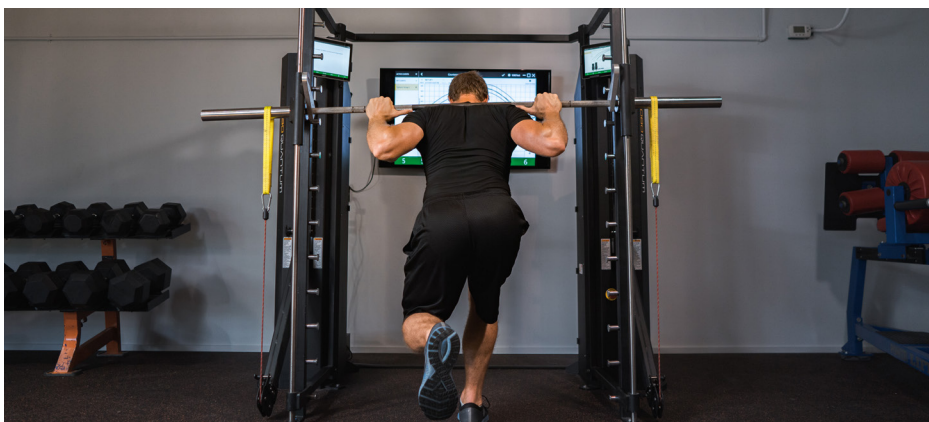


Example of concentric left/right power test showing peak and average values. Rep 3 and 6 displayed in graphs. Peak and average power (watts) are represented with double bar graphs. (Top bar peak watts, bottom bar average watts)

HALF KNEELING HAMSTRING CURL WITH SUPRAMAXIMAL ECCENTRIC STIMULUS



Example of force (newtons) data recorded during a half kneeling hamstring curl with supramaximal eccentric stimulus at 0.1 m/s speed limit.



Isokinetic resistance during single-leg squats performed in the Smith machine with the 1080 Syncro. Provide up to 2800 newtons of force at a concentric speed restriction set at 0.1-0.4 m/s.



Optional squat plate allows for loaded squats, jumps, lateral lunges without slack and full freedom of movement.

ISOKINETIC RESISTANCE

Provide high force, low velocity isokinetic resistance to test and train maximum force capacity within the concentric phase of any movement pattern. In rehabilitation, this is a very safe, gentle, and effective way to introduce strengthening as only a small external load is imposed, and the client will instead use the speed restriction of the isokinetic resistance to match their force capacity. Measure force output to document strength, progress, and side to side asymmetry.

NORMAL RESISTANCE

Features an external load that behaves like a normal mass (with inertia).

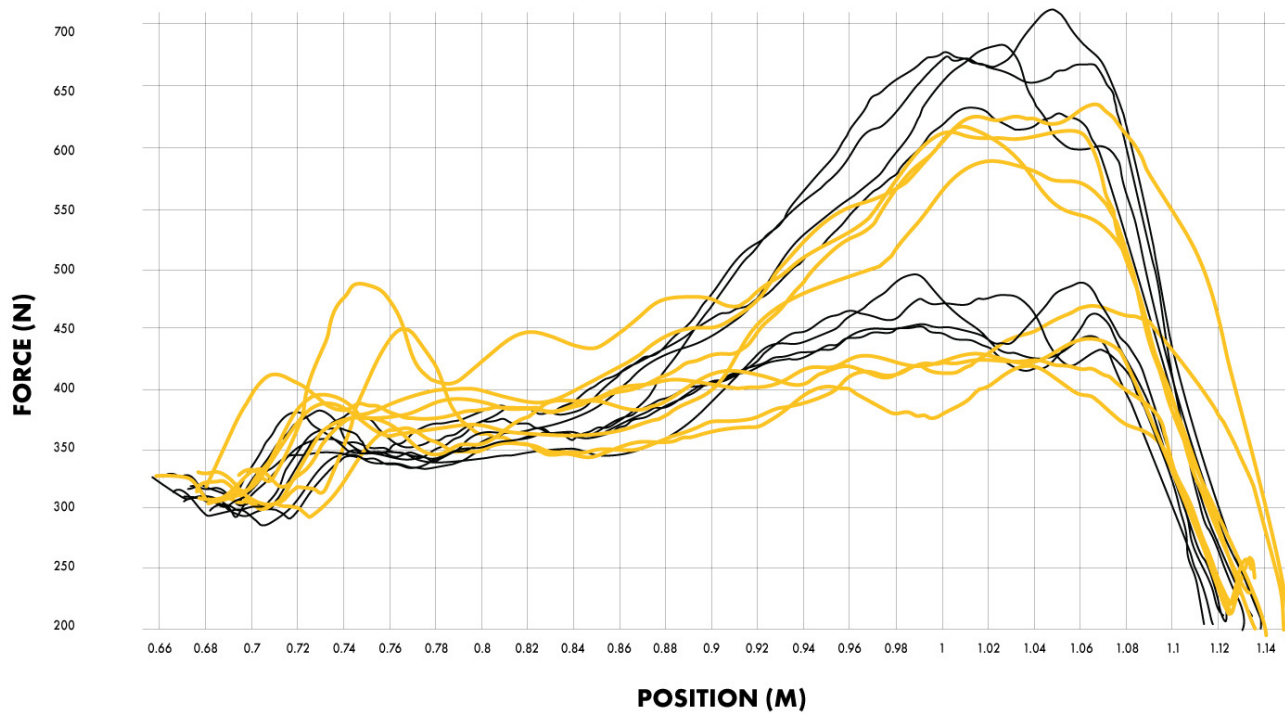
ISOTONIC RESISTANCE

Provide constant resistance with minimal inertia. Isotonic resistance is independent of acceleration, which allows you to assume high movement speeds without the feeling of slack in the line. This provides a gentler feel of the resistance compared to modes where inertia is present (Normal, Ballistic).

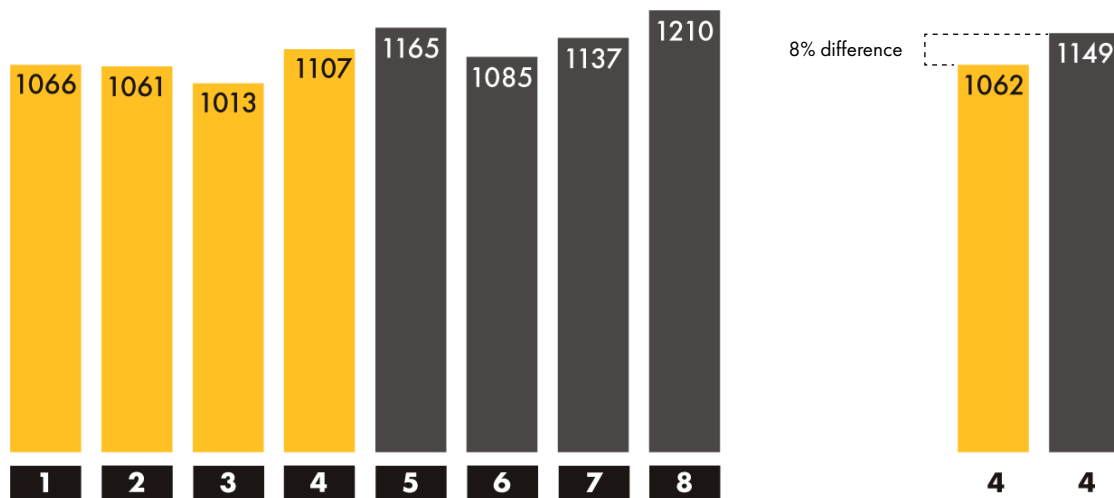
BALLISTIC RESISTANCE

This unique setting compliments isotonic resistance by including inertia during acceleration. Specifically, ballistic resistance simulates normal weight during positive acceleration and constant resistance during negative acceleration. This resistance setting allows you to simulate real-life conditions while avoiding slack in the line during powerful high-velocity movement patterns. It offers a practical and comfortable resistance solution to power training for a wide range of movement patterns.

ISOKINETIC SINGLE LEG SQUAT WITH 1080 SYNCRO

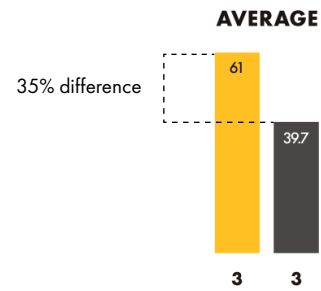
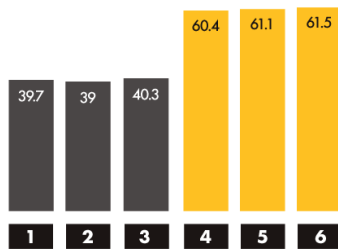
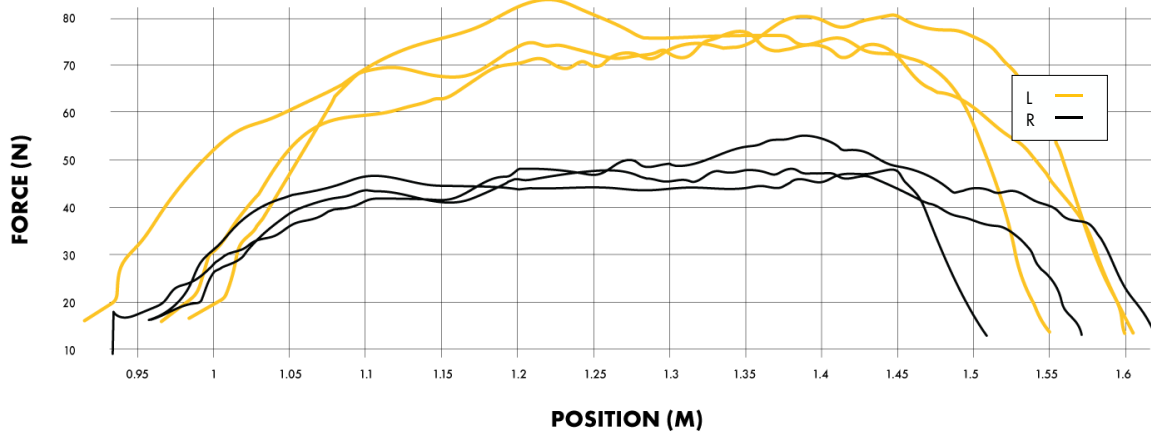


AVERAGE



Continuous force and position data of an isokinetic single-leg squat (top). Bar graphs (bottom) showing the average force for each repetition, with averages of the set of the left and right (far right) showing an 8% difference.

SHOULDER INTERNAL ROTATION (ABDUCTION) FORCE TEST



Force testing in the early stages of injury management highlights asymmetry of shoulder internal rotation. Bar graphs show how average force of the affected side (gray) compares to the uninjured side (yellow) complimented with continuous graphs showing how force develops through the movement.

LOAD - VELOCITY PROFILING

Built-in function for establishing the speed response to different resistance loads. Profiles provide valuable information for any movement such as jumps, rotations, pushes, and pulls. For an individual, compare outputs between limbs or movement direction (e.g. bilateral rotational pull). For groups, assess and prescribe whether force, speed, or both should be targeted in training.

SYMMETRY

Real-time comparisons of movements such as jumps, pushes, and pulls for limb or movement direction asymmetries. Comparisons using force, speed, and power output help identify asymmetries that may impact performance. This information is a valuable tool in the return to sport decision-making process, especially when compared to baseline data from previous tests.



In the gym, 1080 Quantum makes training more efficient with real-time reporting of movement measurements of force, speed, and power compared to traditional methods.



Real-time metrics for each repetition is shown on the touch-screen device.



Pull cords extends out in a 16' radius from machine when fully retracted. Plan space in front of system accordingly for lateral jump or exercises requiring one to two steps. The system is fixed to the floor with anchor bolts. The Smith machine is comprised of seven sub parts assembled on site.

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