1080 MOTION

1080 SPRINT OVERVIEW

MAKE SPEED HAPPEN

1080 SPRINT™

1080 Sprint is a portable multi-use device for on-field resistance testing and training of cyclical movements such as running, swimming, and skating. It is also ideal for change-of-direction movements in ball and team sports such as football, basketball, volleyball, and tennis. Furthermore, utilize the technology to test and train high-velocity and light-loaded repetitions, such as displaying power measurements when jumping or performing rotational trunk movements. The system uses variable intelligent resistance technology to provide a fully controllable resistance in the concentric/resisted and eccentric/assisted movement phase. Thus, the system is ideal for resistance training and rehabilitation of linear acceleration (sprinting), change-of-direction drills, assisted/overspeed sprinting, or a precision power and speed assessment tool for any movement or repetition. It measures power, force, and speed with high accuracy for testing, training, coaching, and providing real-time feedback. With a 90-meter pull cord, 1080 Sprint is an invaluable tool for advanced training, rehabilitation, testing, and research of athletic ability in the horizontal plane.

The system operates from a tablet PC and comes pre-installed with the 1080 Sprint user application. Any test or movement performed using the 1080 Sprint can be captured continuously as peak and average force, speed, and power produced by the subject. The data is presented both graphically and numerically over the measured distance. Users can export test data as a CSV file for further analysis or integration with an Athlete Management System.

Factors such as right/left asymmetries, a low initial rate of acceleration, limited top speed, or low ability to maintain top speed are easily identifiable from the data.

System Specification

- Restance and assistance up to 30 kg (63 lbs), equivalent of a sled load of approx. 100 kg (210 lbs)
- Continuous resistance range 0-150N in gear 1 or 150 – 300 N in gear 2. Maximum resistance in both directions: < 300N during maximum 10s and < 450N during 3s
- Maximum speed 14 m/s (31.3 mph) in gear 1.
- Length of line 90m (98 yds)
- Recorded frequency of force, speed and power: 333 samples per second
- Dimensions (LxWxH): 1004x330x216 mm (39.5x13.0x8.5")
- Weight: 30 kg (66 lbs) Built in wheels and handles for easy transportation
- Power requirement: Available versions of 120 VAC 10 A or 220 VAC
- Certified for commercial and outdoor use toward the UL 1647 standard including ability to withstand rain.

LOAD AND SPEED

1080 Sprint offers sports coaches, conditioning specialists, athletic trainers, and researchers the opportunity to set both load and speed in the concentric/resisted and eccentric/assisted phase of any given movement pattern. The ability to manipulate these primary factors to performance is at the very foundation of human performance. This offers the possibility to create specific testing and training protocols for athletic development purposes or research.

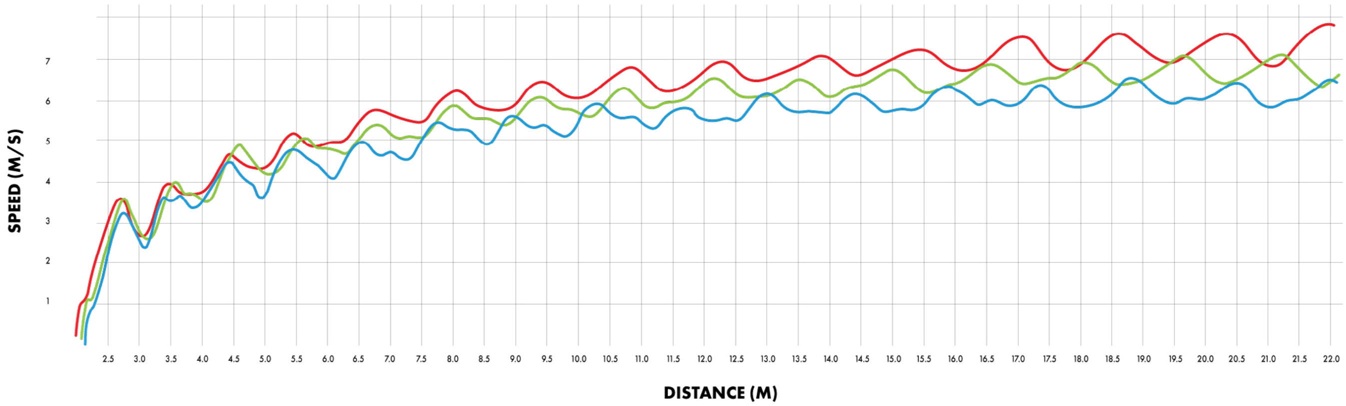
VARIABLE RESISTANCE

Variable resistance offers the unique ability to optimize resistance loading in all sprint phases from start to finish. In sprinting, more horizontal force is generated during acceleration as compared to the constant speed phase. A variable resistance is needed to match this requirement for sprinting and allow for an optimal training load throughout the sprint. Compared to traditional sled training, this feature is the equivalent of a sled that reduces or increases its weight as the speed increases (see figure). When using this feature, the coach can set 1) the initial starting load the athlete will feel when he pushes off from standstill 2) the load the athlete will feel once he reaches a set speed V0, and 3) the V0 speed.

ASSISTED SPRINTING

Like a perfect tail wind, the 1080 Sprint allows for neuromuscular adaptation to high speeds in a fully controlled environment. The settings enable selection of force at which the 1080 Sprint will pull an athlete towards the system, making it possible to determine and apply the most beneficial over-speed formula to each individual athlete using constant or variable force.

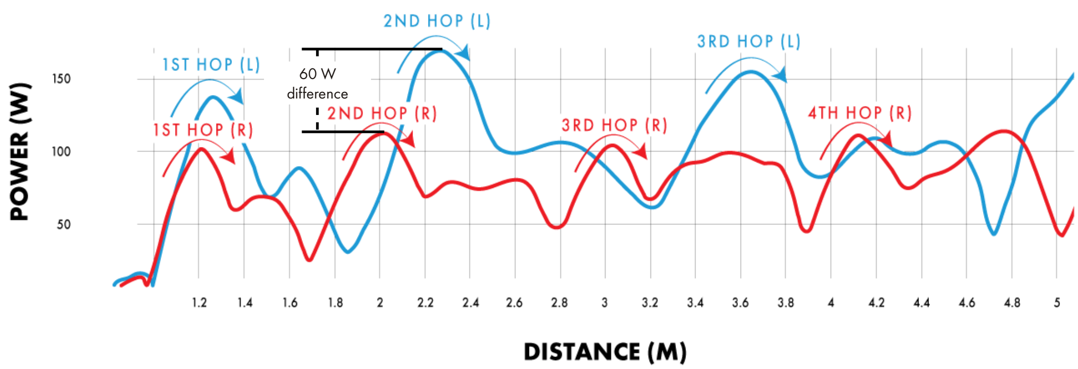
20 METER LOADED SPRINTS



TOTAL TIME	TOTAL DISTANCE COVERED (CENTER OF MASS)	PHASE	DISTANCE	PHASE TIME	SPEED (PEAK|AVG)	FORCE (PEAK|AVG)	POWER (PEAK|AVG)	RESISTANCE SETTINGS
3.56 s	20 m	Best 5m Split	16.98 - 21.98 m	0.69 s	7.91 m/s | 7.28m/s	73.7 N | 56.5 N	582 W | 415 W	3/3 kg Resisted
3.75 s	20 m	Best 5m Split	16.43 - 21.42 m	0.74 s	7.11 m/s | 6.71 m/s	93.1 N | 77.6 N	661 W | 523 W	5/5 kg Resisted
5.24 s	20 m	Best 5m Split	17.03 - 22.03 m	0.81 s	6.58m/s | 6.16m/s	124 N | 99.1 N	816 W | 613 W	7/7 kg Resisted

Example of three sprint curves at three different loads (3,5,7 kg) over 20 meters.

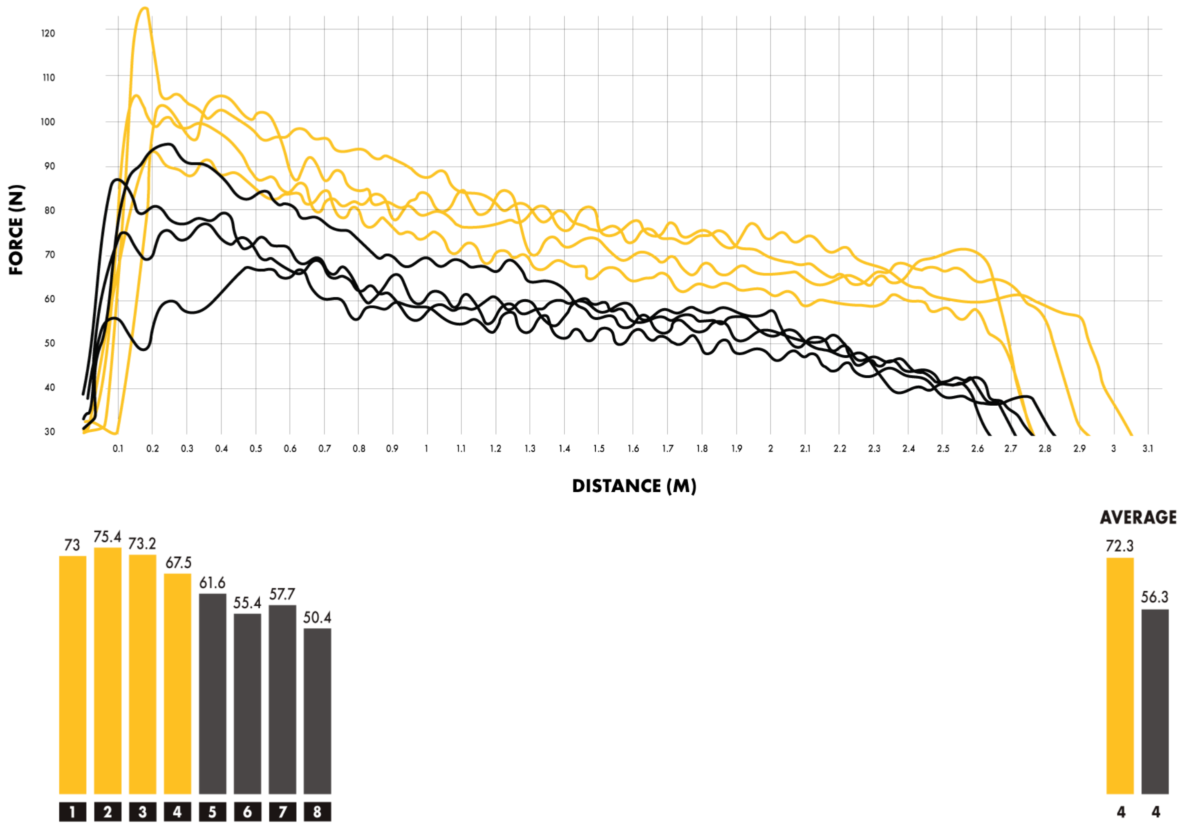
SINGLE LEG CONSECUTIVE HOP TEST



TOTAL DISTANCE COVERED (CENTER OF MASS)	LEG	SPEED (PEAK|AVG)	FORCE (PEAK|AVG)	POWER (PEAK|AVG)	RESISTANCE SETTINGS
5.0 m	LEFT	3.18 m/s | 1.91 m/s	60 N | 39.9 N	170 W| 80.4 W	3/3 kg
5.0 m	RIGHT	2.59 m/s | 1.69 m/s	53.7 N | 39.2 N	115 W | 68.5 W	3/3 kg

Right leg (red) in ACL recovery. Example of a test comparing power and distance of single-leg consecutive hops over 5 meters.

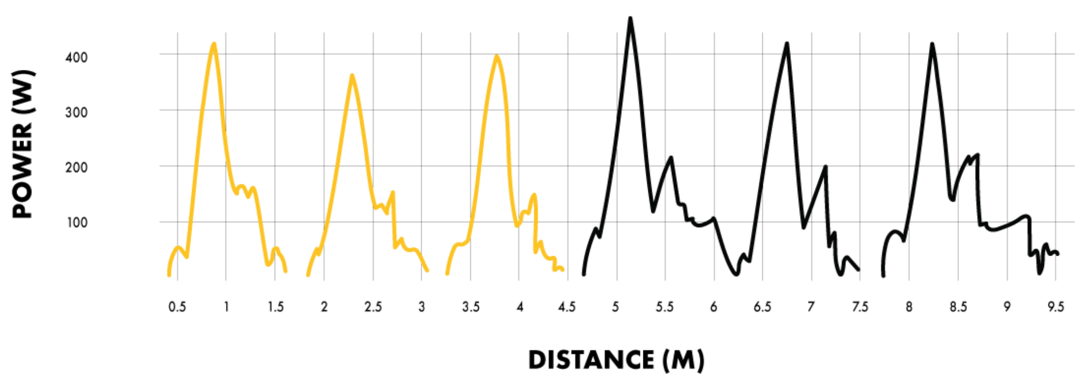
ISOKINETIC FORCE TESTING



Res/Ass Load (kg)		Mode	Gear	Res/Ass Speed (m/s)	
6	6	NFW	First	0.2	3.5

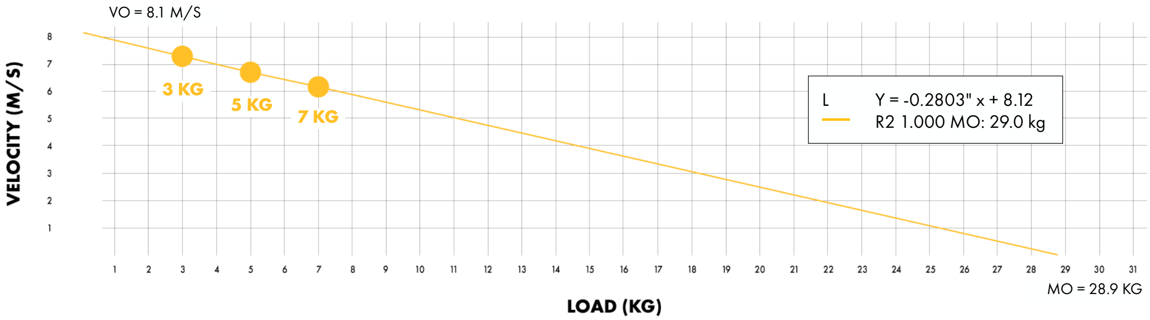
Example displaying force output asymmetry when performing left and right shoulder scapular plane flexion at 0.2 m/s isokinetic resistance. Four reps on each side show an average force value of 72 N on the left and 56 N on the right. These numbers indicate a 23% difference throughout the entire movement excursion. Numbers in bars indicate average values of the whole excursion movement.

FUNCTIONAL HOP TEST POST ACL RECONSTRUCTION



Left leg (yellow) in ACL recovery. Example of a functional hop test post ACL recovery comparing peak power and distance of single-leg consecutive hops. Three reps on each side show an average peak power value of 397 watts on the left and 438 watts on the right. These numbers indicate a 10% difference in power output. Numbers in bars indicate peak values.

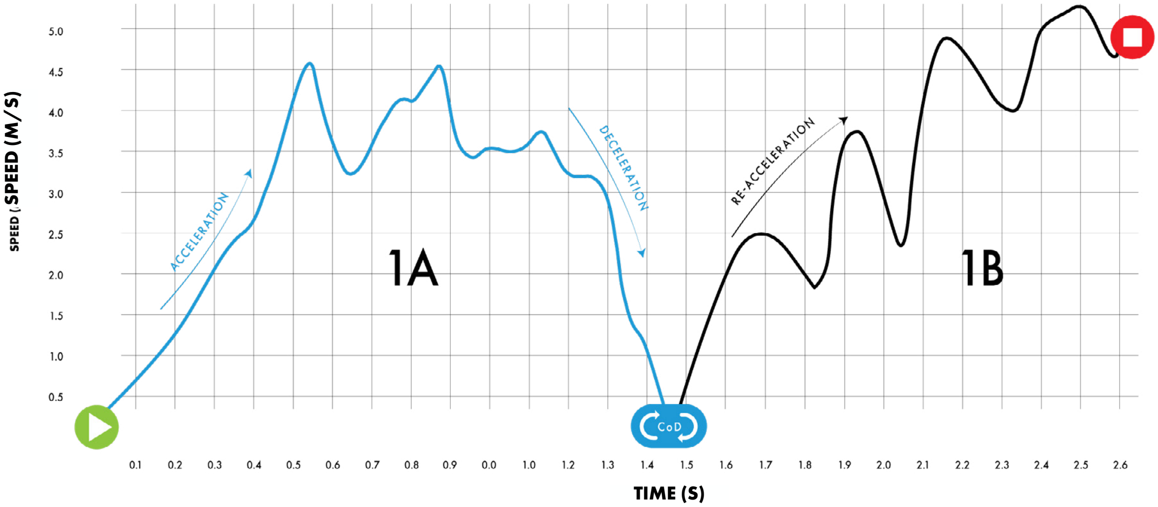
RESISTED RUNNING LOAD VELOCITY PROFILE



Load velocity profile resisted running, forward, and lateral jumps

Load velocity profile of three sprints at three different loads (3,5,7 kg) over 20 meters with display of slope, V0 (theoretical maximal velocity), and M0 (theoretical maximal mass).

5-0-5 CHANGE OF DIRECTION DATA



Example graph showing speed over time, step by step. Real-time data includes total time and distance (representing Center of Mass (COM), displacement) as well as time, distance, speed, force, and power for each phase of the 5-0-5.

TOTAL TIME	TOTAL DISTANCE COVERED (CENTER OF MASS)	PHASE	DISTANCE	PHASE TIME	SPEED (AVG)	FORCE (AVG)	POWER (AVG)	RESISTANCE SETTINGS
2.62 S	8.1 M	1A	4.06 M	1.47 S	2.76 M/S	20.4 N	47 W	6 KG ASSISTED
		1B	4.04 M	1.14 S	3.54 M/S	46.4 N	169 W	3 KG RESISTED

LOAD - VELOCITY PROFILING

Used to assess the athlete's speed response under varying resistance loads. Built-in calculations allow comparison of an athlete's performance over time or between a group of athletes—profile sprints and vertical jumps, horizontal jumps, and trunk rotations.

ECCENTRIC OVERLOADING

Eccentric leg strength dictates the athlete's ability to decelerate quickly. Therefore, it is an essential component in change of direction ability and a key aspect to acceleration, speed, and resilience to injury in sports performed in the horizontal plane, such as football and basketball. Set the eccentric load up to 3 times higher than the concentric load.

CHANGE OF DIRECTION

Learn more than the total time of a drill. Gain visibility into the different phases (i.e. acceleration, deceleration, and re-acceleration) to understand the athlete's ability to move and guide individualized training. Utilize eccentric overloading when training deceleration with directionally applying a precise loaded stimulus.

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