



Load-Velocity Profiling (LVP)

- **Assesses sprint velocity under different resistive loads** to analyze performance in conditions like sled towing.
- **Assesses single repetition under different resistive loads** to analyze performance in squats, pushes, pulls.
- **Provides insights into strength, power, and speed** for each athlete.
- **Enables individualized sprint and strength training under load** based on an athlete's unique profile.

What is Load-Velocity Profiling?

Measure velocities at three different resisted loads to understand how an athlete's speed decreases as load increases

Examples include:

1. Sprinting
2. Reps (Squats, presses, pulls)
3. Jumps (2 leg broad)



Variable	Description	Why it Matters
V_0 – Max Velocity	Top speed with no load	Estimate of raw sprinting ability
M_0 or L_0 - Max Load	Theoretical load at which velocity = 0	Represents maximum horizontal force production
Slope of the Load-Velocity Curve	How much velocity drops as load increases	Indicates force vs velocity balance
R^2 - Coefficient of determination	Statistical measure describing variation in your data	1.0 = The model explains all the variability >0.9 = Trusted data and predictive

How It Works – Sprints

Important Guidelines

1. 100% effort needed during each run
2. Max velocity is attained during each run
3. External load should be separated by at least 5 kg
4. Appropriate rest times between reps



Sample Sprint LV Testing Protocols

Set Load Testing Protocol (2 kg-8 kg-14 kg)

1. 2 kg resistance → 30 meters
 2. 8 kg resistance → 25 meters
 3. 14 kg resistance → 20 meters
- (Minimum 2:30 second rest break between reps)

Bodyweight (BW) Testing Protocol (5%-10%-20%)

1. 5% BW resistance → 30 meters/yards
 2. 10% BW resistance → 25 meters/yards
 3. 20% BW resistance → 20 meters/yards
- (Minimum 2:30 second rest break between reps)

How It Works – Reps

Important Guidelines

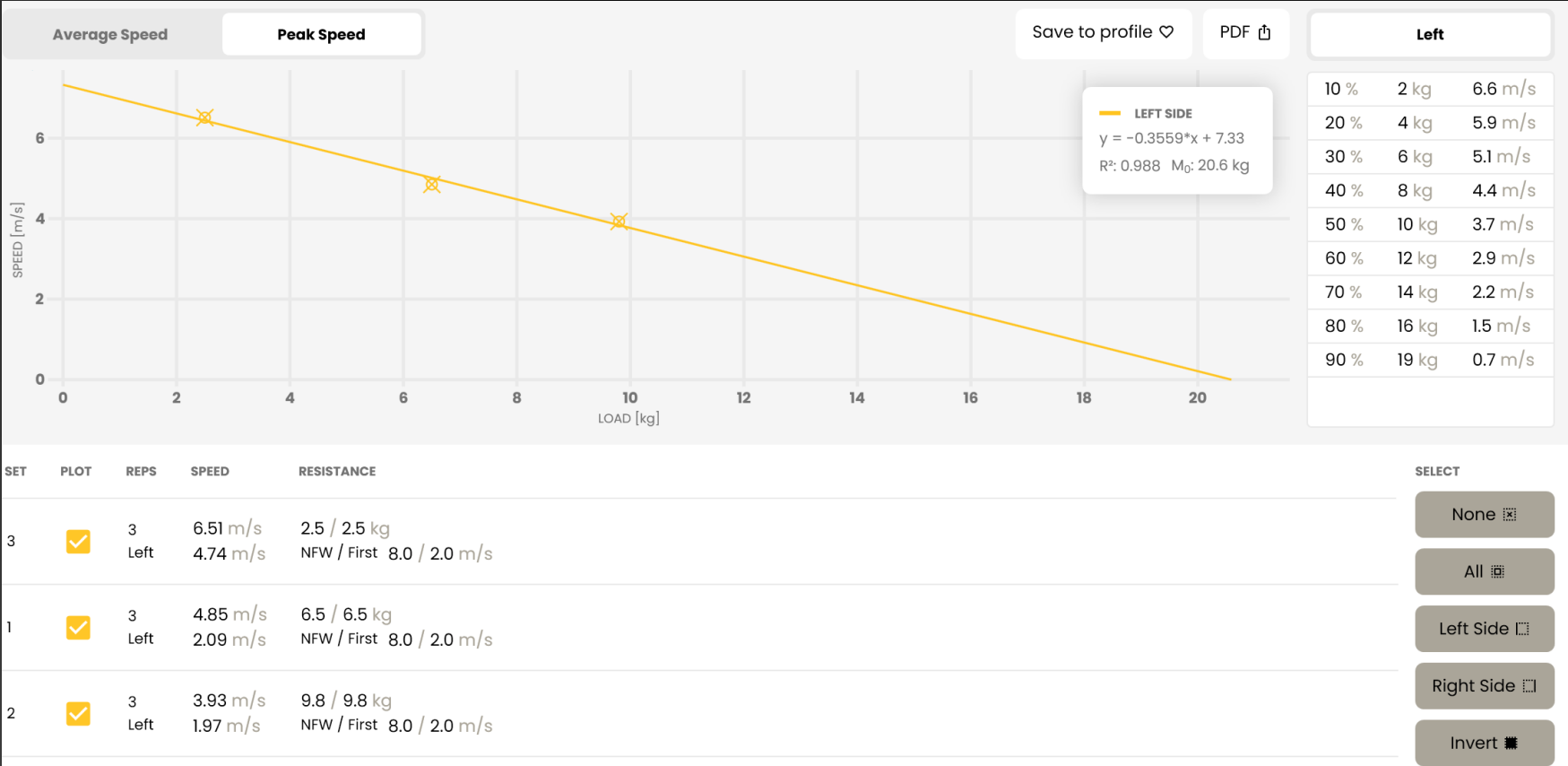
- 1. 100% effort needed during each rep
- 2. Max velocity is attained during each rep
- 3. External load separated by >3 kg
- 4. Appropriate rest times between sets

Sample Rep Type Testing Protocols

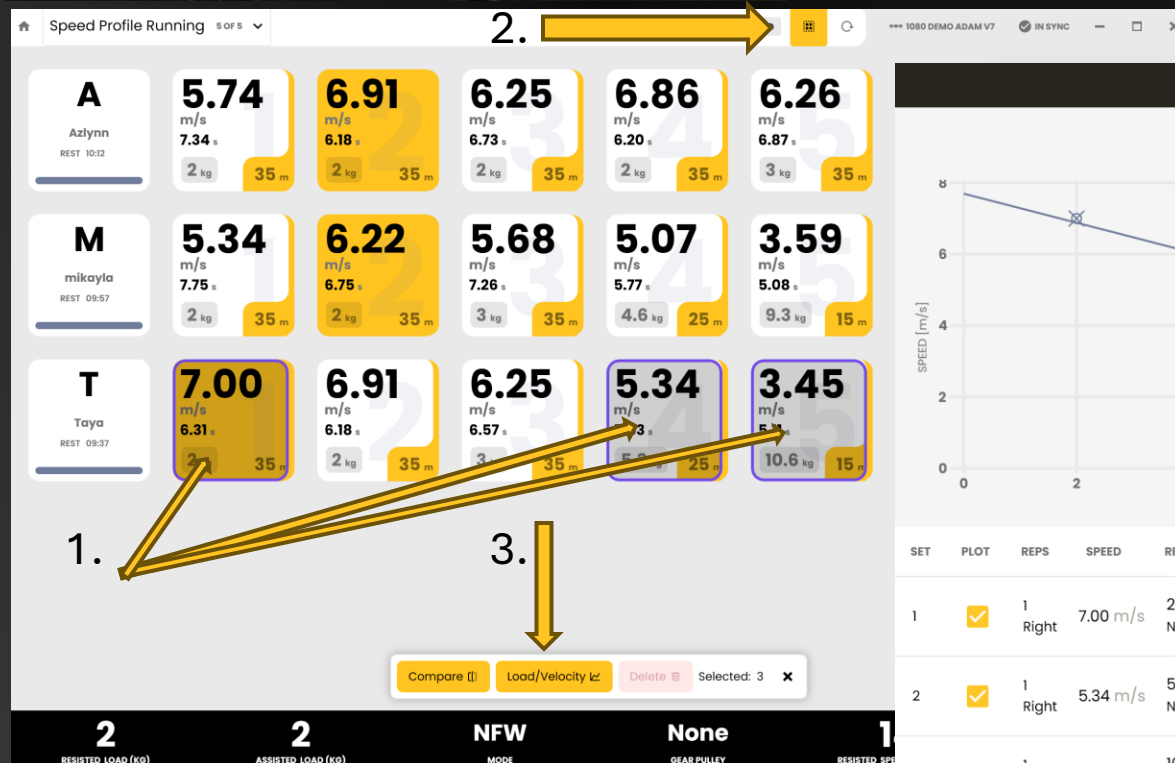
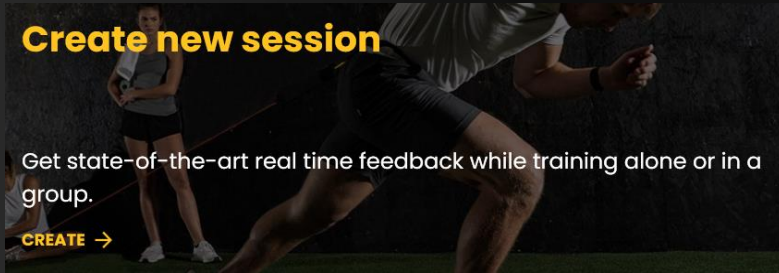
Exercise: Trunk Rotational Pull

Set Load Testing Protocol (2.5 kg – 8%BW– 12%BW)

*3 reps each load

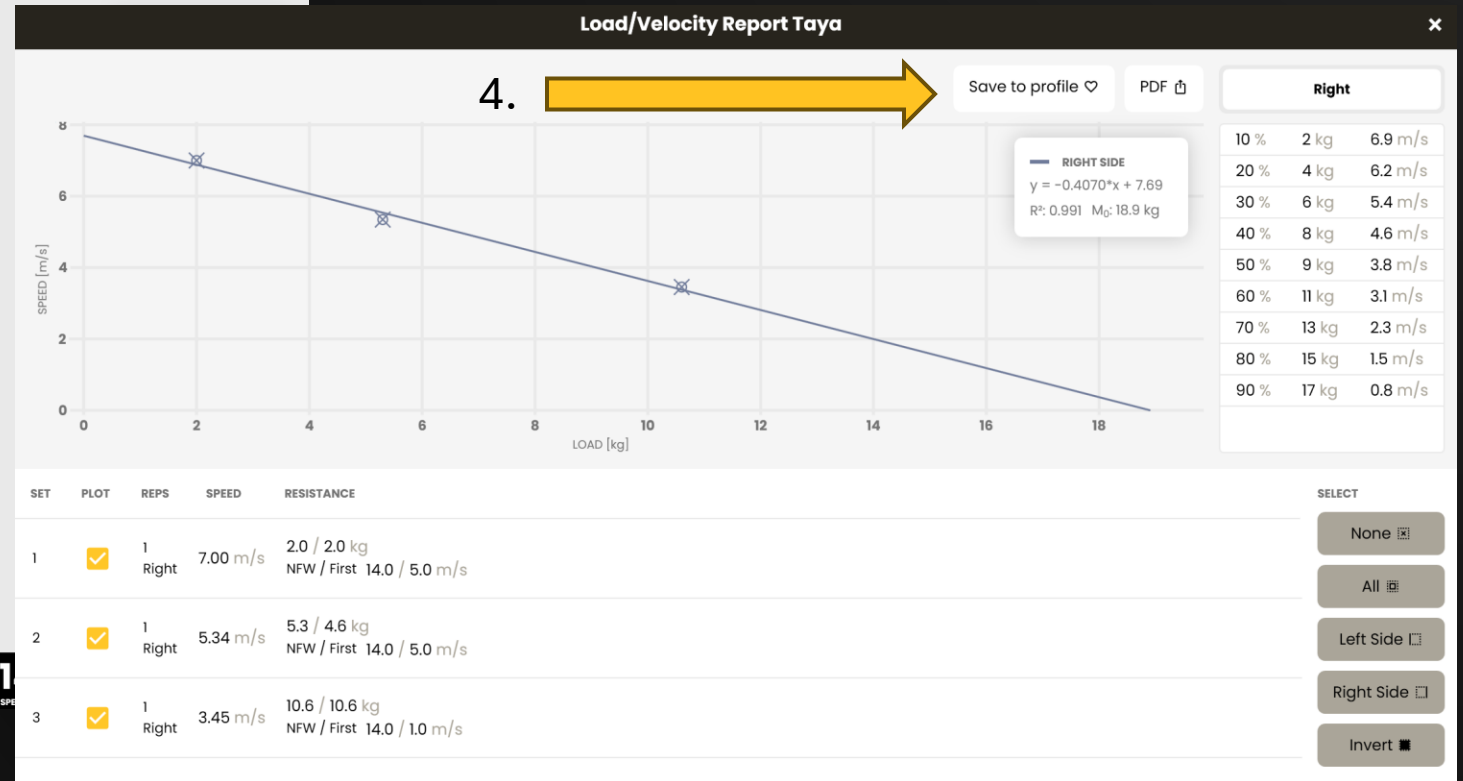


How It Works



Step by Step Process

1. Run minimum 3 times at 3 different loads
2. Click [Grid Icon] and select the three runs
3. Click [Load/Velocity]
4. Save to profile [Heart Icon]

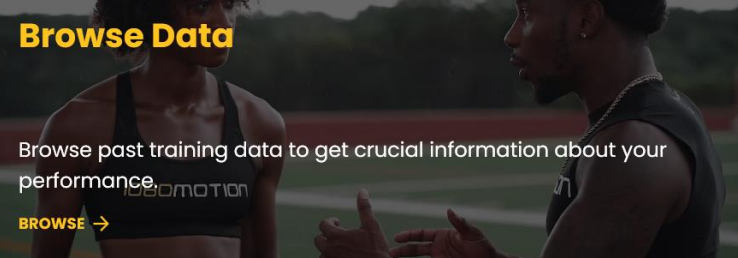


How It Works

Browse Data

Browse past training data to get crucial information about your performance.

BROWSE →



Step by Step Process

1. Run minimum 3 times at 3 different loads
2. Click  and select the three runs
3.

Save to profile 

Browse Taya training data

mikayla Taya x +

Training Sessions

Search Sessions

RECENT

6/12/2025 2:31 PM

Speed Profile Running Running (LR)

TODAY

no sets

2 sets

6/12/2025

Running (LR)

TODAY

no sets

6/11/2025

Speed Profile Running Running (LR)

YESTERDAY

no sets

1 set

6/11/2025

Speed Profile Running

YESTERDAY

1 set

6/10/2025

Speed Profile Running

2 DAYS AGO

1 set

LAST WEEK

6/5/2025

35 m Sprint

LAST WEEK

no sets

5-0-5 Resisted start

no sets

Running

no sets

Single Leg Jump (Forward)

no sets

Running (LR)

no sets

Speed Profile Running

1 set

Exercises

LOCKED FOR TRAINING

☐ By Body Weight

...

Add

1. 

Speed Profile Running

SET	NO	DIST	TIME	TOP SPEED	LOAD	MODE
1	1	35.0 (10.0) m	6.18 (2.46) s	6.91 m/s	2.0 kg	NFW ☒
	2	25.0 (5.0) m	5.53 (0.92) s	5.34 m/s	5.3 kg	NFW ☒
	3	15.00 m	5.11 s	3.45 m/s	10.6 kg	NFW ☒

Running (LR)

SET	NO	DIST	TIME	TOP SPEED	LOAD	MODE
1	1	35.0 (5.0) m	6.31 (0.71) s	7.00 m/s	2.0 kg	NFW ☒
	2	35.0 (5.0) m	6.57 (0.79) s	6.25 m/s	3.0 kg	NFW ☒
	3	10.00 m	3.34 s	3.80 m/s	3.0 kg	NFW ☒
	4	10.00 m	3.61 s	3.62 m/s	3.0 kg	NFW ☒

Load/Velocity Report Taya

2. 

Save to profile 

PDF 

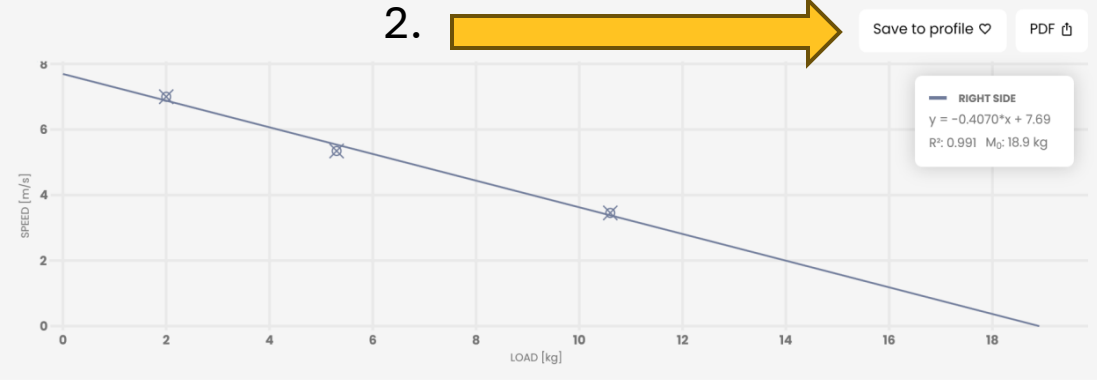
Right

10 %	2 kg	6.9 m/s
20 %	4 kg	6.2 m/s
30 %	6 kg	5.4 m/s
40 %	8 kg	4.6 m/s
50 %	9 kg	3.8 m/s
60 %	11 kg	3.1 m/s
70 %	13 kg	2.3 m/s
80 %	15 kg	1.5 m/s
90 %	17 kg	0.8 m/s

RIGHT SIDE

$y = -0.4070 \cdot x + 7.69$

$R^2: 0.991 \quad M_0: 18.9 \text{ kg}$



SET	PLOT	REPS	SPEED	RESISTANCE
1	☒	1 Right	7.00 m/s	2.0 / 2.0 kg NFW / First 14.0 / 5.0 m/s
2	☒	1 Right	5.34 m/s	5.3 / 4.6 kg NFW / First 14.0 / 5.0 m/s
3	☒	1 Right	3.45 m/s	10.6 / 10.6 kg NFW / First 14.0 / 1.0 m/s

SELECT

None 

All 

Left Side ☐

Right Side ☐

Invert 

2

2

NFW

None

14

RESISTED LOAD (KG)

ASSISTED LOAD (KG)

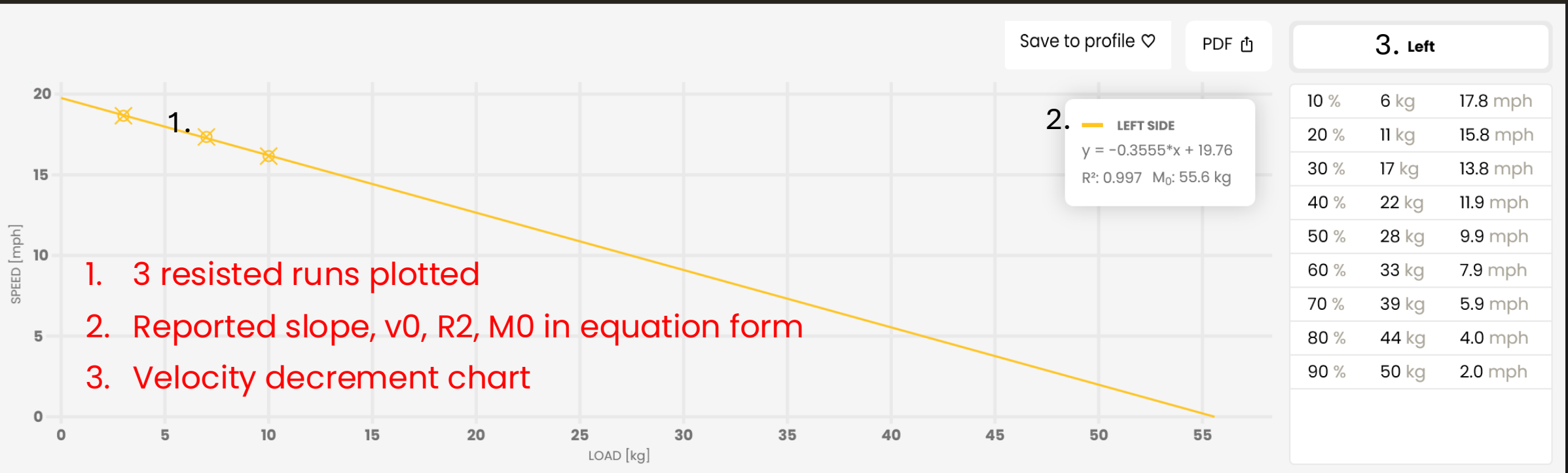
MODE

GEAR PULLEY

RESISTED SPEED

Typical Results – 1080 Sprint

Load/Velocity Report T Lane



Practical example: Set the external resistance on the 1080 Sprint to **17 kg** to reduce the athlete's speed by **30% of their maximum velocity**. Projected top speed under 17 kg load is 13.8 mph based on individual load-velocity profile.

Assigning Training Load

1. Click **New Run**

2. Select client **Taya** and click **Set Loads**

3. Choose **Velocity Decrement** from the resistance settings

4. Assign Velocity Decrement

Set Velocity Decrement

Specify how much the client Taya should be slowed down compared to their top speed for this exercise.

VELOCITY DECREMENT

-10 **-5** **50%** **+5** **+10**

RESISTANCE
9.6 kg

ESTIMATED TOP SPEED
3.8 m/s

Cancel **Ok**

RESISTED LOAD (kg) **2** **2** **NFW**

RESISTED LOAD (kg) **2** **ASSISTED LOAD (kg)** **2** **MODE** **NFW**

RESISTED LOAD (kg) **2** **ASSISTED LOAD (kg)** **2** **MODE** **NFW** **GEAR PULLEY** **None** **RESISTED SPEED LIMIT (M/s)** **14** **ASSISTED SPEED (M/s)** **2**

Application in Training

1. Personalizes resisted sprint loads
 - E.g., if an athlete has high V_0 but low L_0 , consider heavier resisted sprints to improve force production
2. Monitor progress over time
 - Changes in slope indicate neuromuscular adaptations
3. Find optimal resisted sprint loads
 - For training, set external resistance to decrease max velocity
 - Sprint loads that reduce velocity by 10–50% can improve speed, force and power production



Ready to learn more?

Teaching Articles

- [1080Motion | Improving Sprint Speed in High School Athletes, By Kyle Davey article](#)
- [Load Velocity Profiling for Sprints](#)
- [1080 In Session: Creating a Load-Velocity Profile—Broad Jump – 1080 Motion webshop](#)
- [Profiling and Programming for Resisted Sprints in Rugby Union Using the 1080 Sprint](#)

Webinars

- [Les Spellman – Using 1080 Sprint to Access Speed](#)
- [JB Morin – Load Velocity Profiling and Force Velocity Profiling](#)