What is Velocity Based Training?

Velocity-based training (VBT) is a training method that utilizes real-time velocity data that allows the trainer to adjust training loads appropriately.

Assuming that an athlete is training at maximum effort, there are different adaptations for training within different velocity zones. Simply put, if you train slow you're going to get slow. If you train fast you're going to get fast. When utilizing VBT, coaches will prescribe a velocity zone that indicates the desired speed for each movement. If a movement exceeds the range, the load may be too light; if a movement is too slow, it could be too heavy.

One of the main benefits of VBT is that it replaces subjective measures like rating of perceived exertion and enables autoregulation within a training session (1). Autoregulation is the practice of adjusting training loads based on daily capabilities and reducing injury risk. A 1RM can change by up to ±18% daily from fatigue, lack of sleep, external stress, etc. (2) Relying on your percentage of 1 rep max does not account for this daily readiness fluctuation. By prescribing velocity zones and training with maximum effort, it allows this fluctuation to be accounted for as the resistance can be adjusted based on the athlete's current training state.

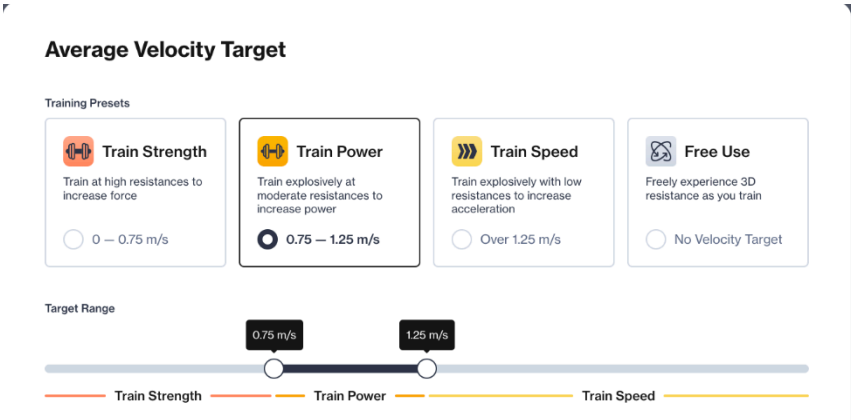

Figure 1. A breakdown of the velocity training zones within Proteus Freestyle mode.

Broadly, there are 3 primary zones that allow for specific adaptations along the force-velocity spectrum Strength, Power, and Speed. There are even more specific zones within these zones, but for clarity we can stick to these 3 primary average velocity training zones. (1)

Strength (Average Velocity of 0 - 0.75 m/s)

- The strength velocity training zone should be used for movements that are intended to promote force production. This means choosing heavier relative loads that allow for the athlete to train at a lower velocity with maximum effort. Once an athlete has the ability to generate force at lower velocities, they can begin to focus on producing that same force more quickly.

Power (Average Velocity of 0.75 - 1.25 m/s)

- The middle velocity training zone is Power. This zone strikes a balance of force and speed production. If the movement exceeds the range with maximum effort, the load is too light; if the movement is too slow with maximum effort, the load is too heavy.

Speed (Average Velocity > 1.25 m/s)

- This velocity training zone puts an emphasis on training movements at high-speed with low relative resistance. The speed training zone is the perfect stimulus for stronger athletes with an established ability to produce force that need to train the ability to produce force more quickly.

Power is a product of force and velocity [Power (W) = Force (N) x Velocity (m/s)]. Therefore both strength and speed need to be trained appropriately for an athlete to perform their sport specific task effectively. As mentioned before, traditional velocity training zones are broken down even further into 5 different zones. With these additional training zones in mind, coaches may want to put an emphasis on training the force or velocity side of the power equation.

- If you want to train the force side of the power equation, you'll want to train at an average velocity of 0.75 - 1.0 m/s. Traditionally this velocity training zone is known as Strength Speed.
- If you want to train the velocity side of the power equation, you'll want to train at an average velocity of 1.0 - 1.25 m/s. This velocity training zone is usually referred to as Speed Strength.

You can see a further breakdown of these zones in this visual.

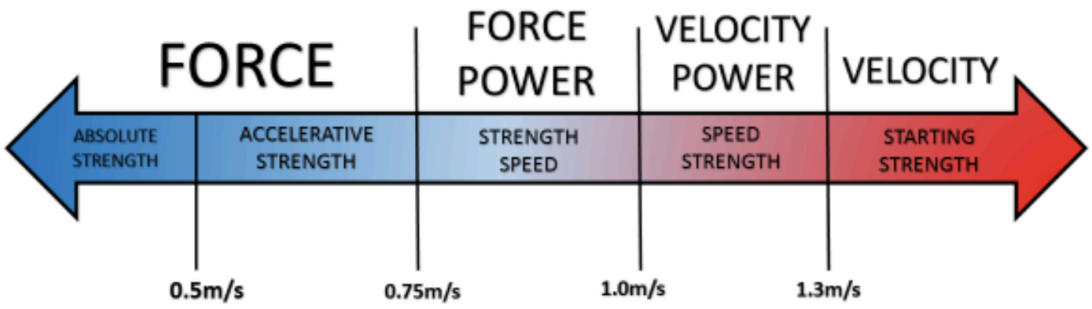

Figure 2. A visual breakdown of the traditional velocity training zones. (1)

Sources:

1) Giuliano, T., & Terrell, T. (2016). Force and Power: Maximizing Performance with Velocity-Based Training. (1st Ed.)
2) Jovanovic M, Flanagan EP. Research Applications of Velocity Based Strength Training. Journal of Australian Strength and Conditioning. 2014;21(1):58-69.