Velocity-Based Training

Strength training periodization historically has been based on a predicted or measured 1RM. It is a proven method but comes with limitations inherent to its implementation. It is a very rigid model which does not consider the primal utility of force. The human body needs slow-twitch fibers for stability and enduring characteristics with anticipatory readiness, moderate-twitch characteristics for support of global applications of stability and dynamic force transfer, and fast-twitch fibers for ballistic and plyometric contractions for survival and sport. Standard strength training based on 1RMs does not reflect the impact of genetic diversity or inter-individual variability - as it is a single variable. This explains, at least in sports, why the strongest athletes are not usually the best. The difference is the best athletes can access the efficiencies of force and use physical intelligence to better manage the situation and outcome.

Today's strength coaches are becoming more adept in the novel approaches of using velocity and load components to account for the utility of human force for performance. Using velocity as an added variable cleans up the periodization errors associated with loads that are too heavy or too light and helps reduce overtraining when thoughtfully applied.

Any training method that utilizes the speed of movement as a stress must do so under the consideration of the unique characteristics of the Load-Velocity relationship - essentially any increase in the workload necessitates a linear decrease in

the speed of movement (exercise) execution. This means that if you measure the speed of execution of an exercise over a wide range of different loads and graph it, the report of the points on a graph will present a predictable curvilinear alignment.

And just because something needs to be lighter to move faster does not mean the forces employed are low. Ballistic contractions provide the bridge between voluntary dynamic muscle activity and plyometric movement. The rate of force development is dependent on the relationship and mechanical efficiencies of polyarticular actions of the body. The stronger and more stable the action, the more powerful the action can become. This explains why in pursuit of improved performance initial efforts are aimed at central and peripheral stability, followed by dynamic force across the greatest range, before training for maximal force. Foundational stability across all joints improves energy transfer, increased force across those stable segments promotes greater capabilities in power which ultimately can become heightened speed of movement.

Training slowly certainly increases muscle fiber cross bridge time and numbers as well as enhances total fiber recruitment across moderate-to-high loads, allowing for more force. Higher-velocity training changes the recruitment profile due to the increase in speed which reduces the maximum force. This is known as the force-velocity curve. But across the middle of the force continuum exists peak power, so in a sense the opposite models complement each other.

Based on this knowledge, different exercises and intensities can be categorized across the program to account for all aspects of muscle adaptation. When implemented correctly utilizing force and velocity (symbiotically) will allow athletes to move larger loads at higher velocities, then when applied to body weight the strength/power-to-weight ratio increases, which is a predictor of improved performance.

The training zones employed in a program should always be inclusive of both force and velocity, but at different doses and intensities. As mentioned earlier, each segment of adaptational improvement is needed (developmentally), so the residuals promote improvements along the kinetic chain to the end goal of improved performance.

CONSIDER THE PHASE CHARACTERISTICS:

PHASE 1

Exercise Selection is Unilateral Dominant

GOAL

Stability Across the Broadest Range

EXAMPLES

Practice-load Olympic Pulls, DB Jump Shrugs, MB Throws and Slams, Low-Height Rebounds for Dynamic Stability, Eccentric Landings

PHASE 2

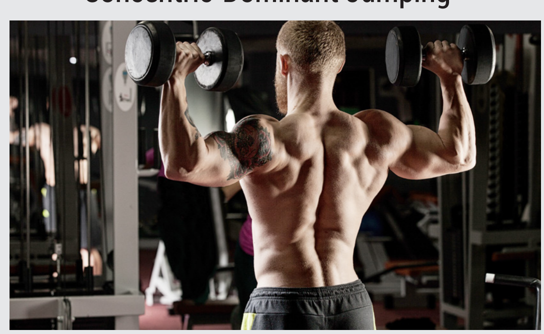
Exercise Selection is Equal Unilateral and Bilateral

GOAL

Improved Force Transfer Across the Broadest Range

EXAMPLES

Moderate-load Olympic Pulls, Trap Bar Jump Pulls, DB Push Press, Single-Arm Snatch, MB Passes and Rebounds, Concentric-Dominant Jumping



PHASE 3

Exercise Selection is Bilateral Dominant

GOAL

Elevated Force and Force Transfer

EXAMPLES

High-Load Olympics Pulls, Combination Ballistics (Front Squat to Push Press), Maximal Vertical and Horizontal Jumps With or Without Loads

PHASE 4

Exercise Selection is Unilateral Dominant

GOAL

Elevated (Stable) Force

EXAMPLES

Single-Arm Split Jerks, Single-Leg Jumps and Bounds, Alternating Ground/Bench Ballistic Push-Ups

PHASE 5

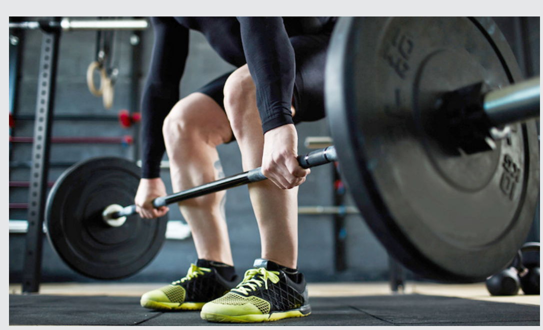
Exercise Selection is Functionally/ Sport Dense

GOAL

Maximizing Force Transfer Speed

EXAMPLES

High-Speed Olympic Pulls, Varied Jumps, Maximal Throws, Bounding for Height



As depicted by the examples, there exists a fluid continuum where different variables are highlighted across the force-velocity curve. What starts in foundational musculoskeletal efficiency, lends itself to greater force attainment, which is subsequently transferred to increased velocity efficiencies -- manifesting in competent high-speed movement. The duration within any of these phases is specific to an individual or team's needs. Those who are new to training will spend more time in the first three phases, whereas those who are well-tenured will spend more time in the last three. A key element to any exercise selection across the phases is technique competency. Exercises must be mastered in technique before considering load or velocity as progressing faulty movement patterns will lead to undesirable outcomes. ■

Velocity-Based Training.
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