

May the Force be with you!
Ashley Jones & Luke Thornley

Rate of force development (RFD) is a key factor in sports performance. RFD has been described by Santana (2000) as “the ability to generate the greatest amount of force in the shortest time possible.” In the book, Sports Speed, Dintiman, Ward and Tellez (1998), define starting strength which is a component of RFD as “the ability to instantaneously recruit as many muscle fibres as possible,” and explosive strength as “the ability to keep the initial explosion of a muscle contraction going over a distance against some resistance.” After an exhaustive review of the literature, the leading Australian strength and conditioning coach, Damian Marsh, identified Explosive Strength as “the firing of muscle fibres over a longer period of time after initial activation.”

It is also the missing link in a number of athletic performance programs where maximal strength and/or hypertrophy has been a consistent goal and outcome over a period of time. I am not for a minute saying that strength and appropriate hypertrophy are not important but I am saying that often they are prioritized over more important strength qualities. In a lot of ways it is easy to program for strength and size increases and a lot more difficult to firstly understand and then to program for RFD.

As so succinctly demonstrated by Thibideau in his force chart, in training you are trying to manipulate the Force equation by either emphasizing the mass or the acceleration components or both.

I like the continuum of training as described by Thibideau, I have not included the hypertrophy related parameters within it, as follows:

Plyometric/Ballistic

Speed Strength (10 – 40% 1RM)

Strength Speed (50 – 80% 1RM)

Maximum Strength (>80% 1RM)

In a recent article on www.elitefts.com the speeds to train specific qualities and exercises were outlined, this is an excellent starting point from which to develop a plan of attack. In this article in reference to the bench press and squat the bar speeds were identified as:

Speed Strength – 0.8 to 1.0 metres per second

Strength Speed – 0.6 to 0.7 metres per second

Maximum Strength – 0.3 to 0.5 metres per second

And in reference to the modified Olympic lifts:

Power Snatch – 1.50 metres per second

Power Clean – 1.25 metres per second

These velocities were calculated using a Tendo Unit, but I am sure if you used a Gym Aware unit and program or, Ballistic Measuring System of www.fittech.com.au or the V Scope from Eleiko you could use the same calculations to base your loading parameters on.

Two workouts to optimize this continuum would be as follows the sets and reps would be 12 to 4 sets of 2 to 6 reps, utilizing the inverse relationships law as outlined by Poliquin.

Ballistic or Plyometric Jumps	Depth Jumps	Box Jumps
Speed Strength	Power Snatch or Clean	Jump Squats
Strength Speed	Snatch or Clean Pulls	Band Box Squats
Maximal Strength	Trap Bar Dead Lifts	Squat variations

These could be performed as two separate workouts in an off season plan or as we often do as a power speed complex in season as a potentiation workout for speed and power. In this workout the players would alternate from a field based activity to a gym based power movement as listed. This is summarized below, speed training equipment and programs based around the XLR8 program designed by Glen Jenkins and Jamie Tout www.speedpowerstability.com :

F1. Dynamic Movement Warm up

Micro Fastfoot Ladders and Quicken Micro and Mini hurdle sequences

F2. Medicine Ball throws and acceleration sprints over 10 – 15 metres

G1. Depth or Box Jumps in gym

F3. Assisted sprints utilizing short (mini slingshot overspeed trainers) and/or long (slingshot overspeed trainers)

G2. Power Snatch from blocks set at knee height, Block Cleans or Jump Squats (6 sets of 3 reps at 30 – 40%)

F4. Maximal velocity work over 30 – 60 metres

G3. Clean or Snatch Pulls from the floor or Band Box Squats (6 sets of 3 reps at 60 – 80%)

F5. Resisted speed efforts utilizing either pro power speed resistors, power speed chutes, power speed sleds, these are often performed with a contrast sprint after the loaded sprint

G4. Trap Bar Dead lifts or Front or Back Squats (6sets of 3 reps at > 90% 1RM loading)

This entire speed and power complex training is completed inside of 60 minutes.

Ashley Jones would like to dedicate this article to Louise Timberlake, whose guidance and support make it all worthwhile. “When the student is ready the teacher will appear”

Specific Reading:

Thibideau, C. The black book of training secrets, an excellent chart and explanation of strength qualities, pp 33 – 44.

Verkoshansky, Y. Special Strength Training Manual. Should be mandatory reading for all strength coaches.

Zatsiorsky, V. Scientific Practice of Strength Training, specifically the chapters on task specific strength training and goal specific strength training.

Verkoshansky, Y and M. Siff. SuperTraining. It should be on your desk all the time, so when you have a moment open it anywhere and read.