

Building Explosive, Powerful Athletes



How Do You Develop
Explosive Power?

The Definition

- $\text{Power} = \text{Force} \times \text{Velocity}$
- $\text{Velocity} = \text{how fast you move the weight.}$
- $\text{Force} = \text{Mass} \times \text{Acceleration} = \text{how much weight you move multiplied by how much you accelerate the weight}$

Factors that Affect Explosiveness

- Muscular Strength
- Stretch-Shortening Cycle
- Coordination of Movement
- Plyometric Training

Muscular Strength

Traditional strength training has been shown to increase explosive strength in individuals of average or lower strength

There is a point of diminishing returns for previously trained individuals or those with above average strength

Stretch-Shortening Cycle

Most power activities involve a counter movement which causes the muscle involved to be stretched rapidly, then shortened, accelerating the body or limb

Activities without this rapid stretch-shortening are not as productive as those that do have the stretch-shortening phase

Coordination of Movement

Performance is affected by the holistic interaction of all muscles involved in the movement.

To produce fast movement, resistance must be low and movement fluid

Antagonistic muscle groups must relax efficiently, while agonistic muscles contract

Plyometrics:

Exercises based around having muscles exert maximum force in as short time as possible

Plyometrics increase the height of jumps that include counter movements (Long Jump, Vertical Jump), but do not have any significant effect on jumps from static positions (track start, linemen stance)

Why the Olympic Lifts?

- The Factors that Affect Explosiveness are addressed
- They build muscular strength
- They contain the stretch shortening cycle within the movement
- They are technical lifts that require a certain level of Coordination of Movement
- They are plyometric in nature.
- During the Power Clean, a 100kg lifter generated 4191 watts of power, During the Deadlift, only 1274 watts of power were generated (Garhammer, 1980)
- Garhammer found that the Olympic Lifts produce 3X more power than the Traditional Strength building lifts
- They are Competitive
- THEY ARE FUN TO COACH AND FUN TO PERFORM!

What are the Olympic Lifts

- Clean & Jerk
- Snatch

Start with these important Concepts

- The Starting (set) position
- The Pull

The Starting (Set) Position

- All body levers are tight
- Feet are in vertical jump position, toes slightly turned out.
- back should be flat
- arms should be locked and elbows rotated to ends of bar
- Head up eyes straight
- hips higher than knees
- Shoulders in advance of the bar



The Pull- same for Clean and Snatch

- Bar must move back towards the lifter immediately
- Hips and shoulders should rise at the same rate
- head stays level
- The 2nd pull must be faster than the 1st pull
- Stay flat footed as long as possible
- The arms only bend to pull the athlete under the bar
- Feet move from pulling position to receiving position



Which Olympic Lifts Do I Teach 1st?

- The Power Clean is taught 1st
- The Power Clean is introduced in Stages
- Taught from the Top Down

Basic Exercises

Clean Progressions

- Front Squat
- Power Clean from mid-thigh
- PowerClean from the Knees
- Power Clean from below the Knee
- Power Clean

Front Squat

- Bar should rest across shoulders and chest
- Elbows Up
- Relax grip



Power Clean from Mid-Thigh

- From starting position inflate chest, slightly unlock knees.
- Moving only the hips lower the bar till it reaches mid-thigh
- Explosively extend body upward keeping the arms straight as the lifter shrugs the shoulders and rises on the balls of the feet (triple extension)
- Lower quickly under the bar bending the legs and rotating hands around the bar
- The bar is received on the shoulders and upper chest
- Front squat the weight up and breath



Power Clean from the Knees

- From starting position inflate chest, slightly unlock knees.
- Moving only the hips lower the bar till it goes below the knees
- make sure the shoulders are moving forward over the bar as it lowers
- Make sure lifter stays flat footed
- Explosively extend the body upwards as in PC from mid-thigh
- Lower quickly under the bar bending the legs and rotating hands around the bar
- The bar is received on the shoulders and upper chest
- Front squat the weight up and breath



Power Clean from Below the Knees

- Same as mid thigh and knee positions except the bar is lowered below the knees
- The knees get out of the way of the bar, the bar does not go around the knees
- You will need to spend some time here before you move to the next stage.



Power Clean

- The lifter approaches the bar and proceeds to the starting position
- Set the back and rotate the elbow out so they are pointing to the ends of the bar
- Pull shoulder blades back to help set the back
- make sure bar is touching the shins and is positioned over the arches of the feet
- Take the slack out of the bar
- From a balanced position with flat feet and shoulders over the bar take the slack out of the bar
- Push the legs extending them and accelerating the bar upward
- Receive the bar on the shoulders and upper chest with elbows up



Basic Exercises

Snatch Progressions

- The Snatch Grip
- Power Snatch from mid-thigh
- Power Snatch from The knees
- Power Snatch from below the Knees
- Power Snatch

Snatch Grip

- Where are the hands placed
- Must learn the Hook Grip



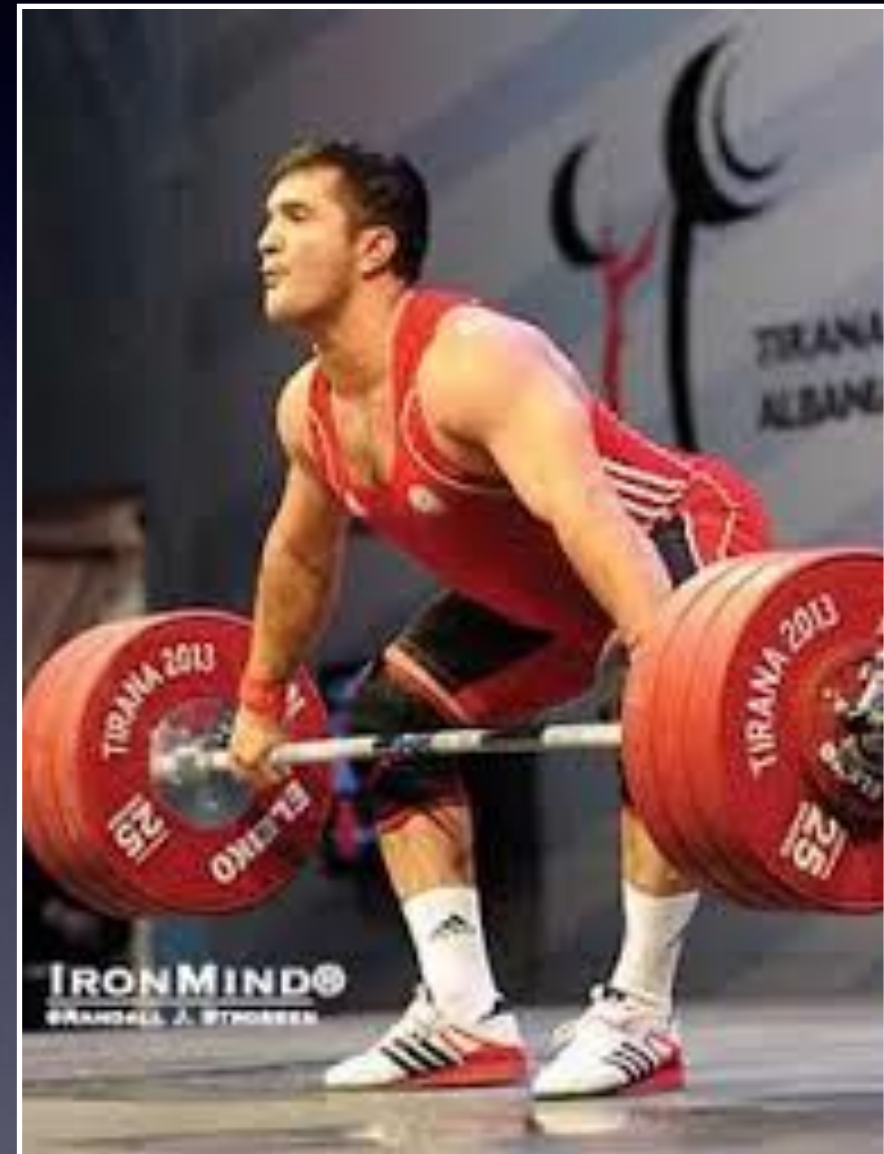
Power Snatch from Mid Thigh

- Using the Snatch Grip get to the start position as we did in the Power Clean from mid thigh
- Moving from the hips lower the bar to mid thigh
- Explode the bar upward extending hips,shrugging shoulders and rising on the balls of the feet. Make sure that arms stay straight
- the bar should continue to rise as the lifter pulls themselves under the bar and jumping to a squat stance
- The bar will be received at arms length above the head



Power Snatch from the Knees

- From the same starting position as the power snatch from mid-thigh, lower bar to the knees
- Explode the bar to the receiving position overhead at arms length
- The bar should continue to brush the thighs and lower abdomen through triple extension



Power Snatch from Below the Knees

- From the same starting position as the power snatch from mid-thigh, lower bar below knee
- Explode the bar up to the receiving position overhead t arms length
- The knees should get out of the way of the bar.



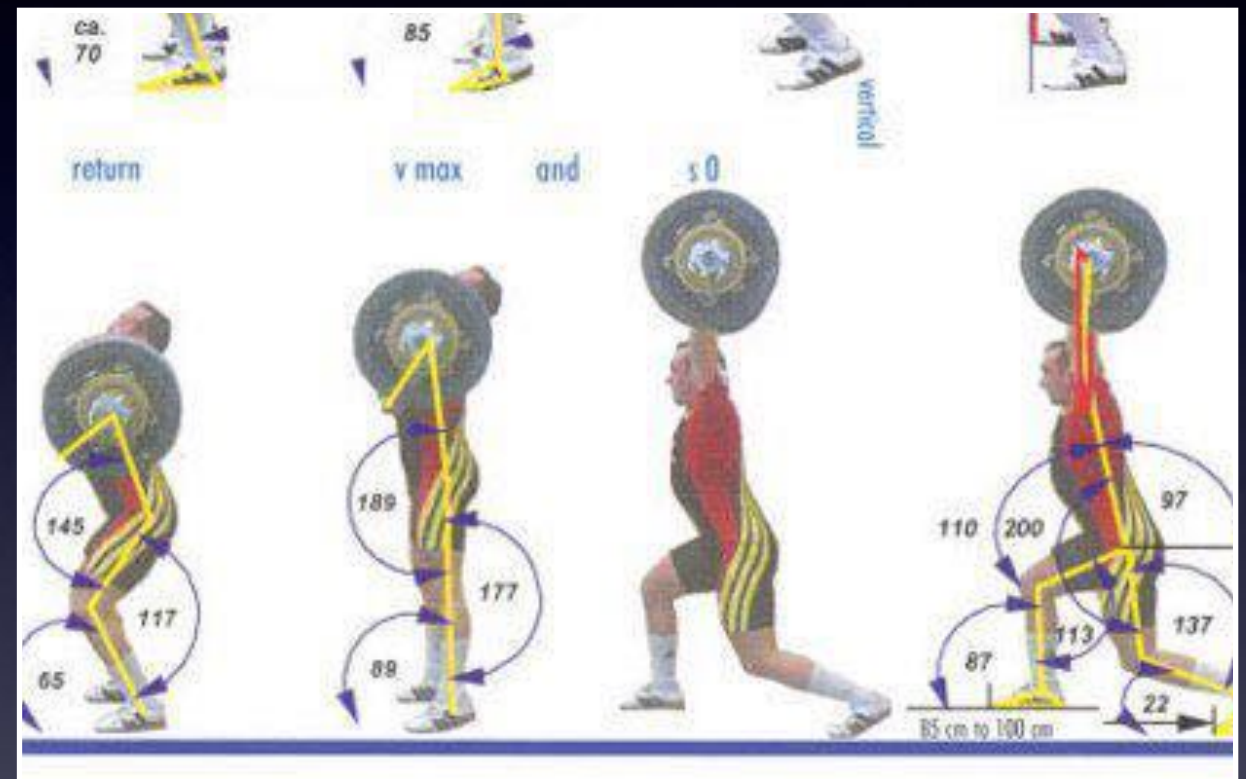
Power Snatch

- Approach the bar on the floor and proceed to the starting position
- Set feet and back and rotate elbows to the end of the bar, then pull shoulder blades back to help set the back
- From a balanced position making sure feet are flat and the shoulders are in advance of the bar keep the arms straight From a balanced position making sure feet are flat and the shoulders are in advance of the bar keep the arms straight
- Start the 1st pull by pushing with the legs, the hips and shoulders should rise at the same time.
- Explode through the second pull through triple extension.
- Pull yourself under the bar and receive it overhead with extended arms
- Stabilize if necessary then stand up.



The Jerk

- Once the lifter has “cleaned” the weight and is standing, the feet move back to hip width position.
- The lifter is going to dip short and explosively by bending the legs
- At the bottom of the dip the lifter should still feel the weight on the heels.
- From the dip position drive up violently and vertically by extending the legs and rising on the balls of the feet.
- The lifter jumps the feet by splitting forward and backward into a lunge position.
- The lifter should be push themselves down into the lunge position extending the weight into the over head position
- To recover first move the front foot back to the original start position followed by the rear foot(very important)



Skill Transfer Exercises for the Snatch

- Overhead Squat
- Pressing Snatch Balance
- Heave Pressing Snatch Balance
- Snatch Balance

Skill Transfer Exercises for the Jerk

- Push Press behind the Neck
- Power Jerk Behind the Neck
- Push Press
- Power Jerk
- Jerk

Common Errors

- Bar moving around the knees
- The bar drifting at the start
- Forward movement/jumping forward in the catch position
- Backward movement/jumping backward in catch position
- feet jumping too wide in catch position
- Pulling with bent elbows

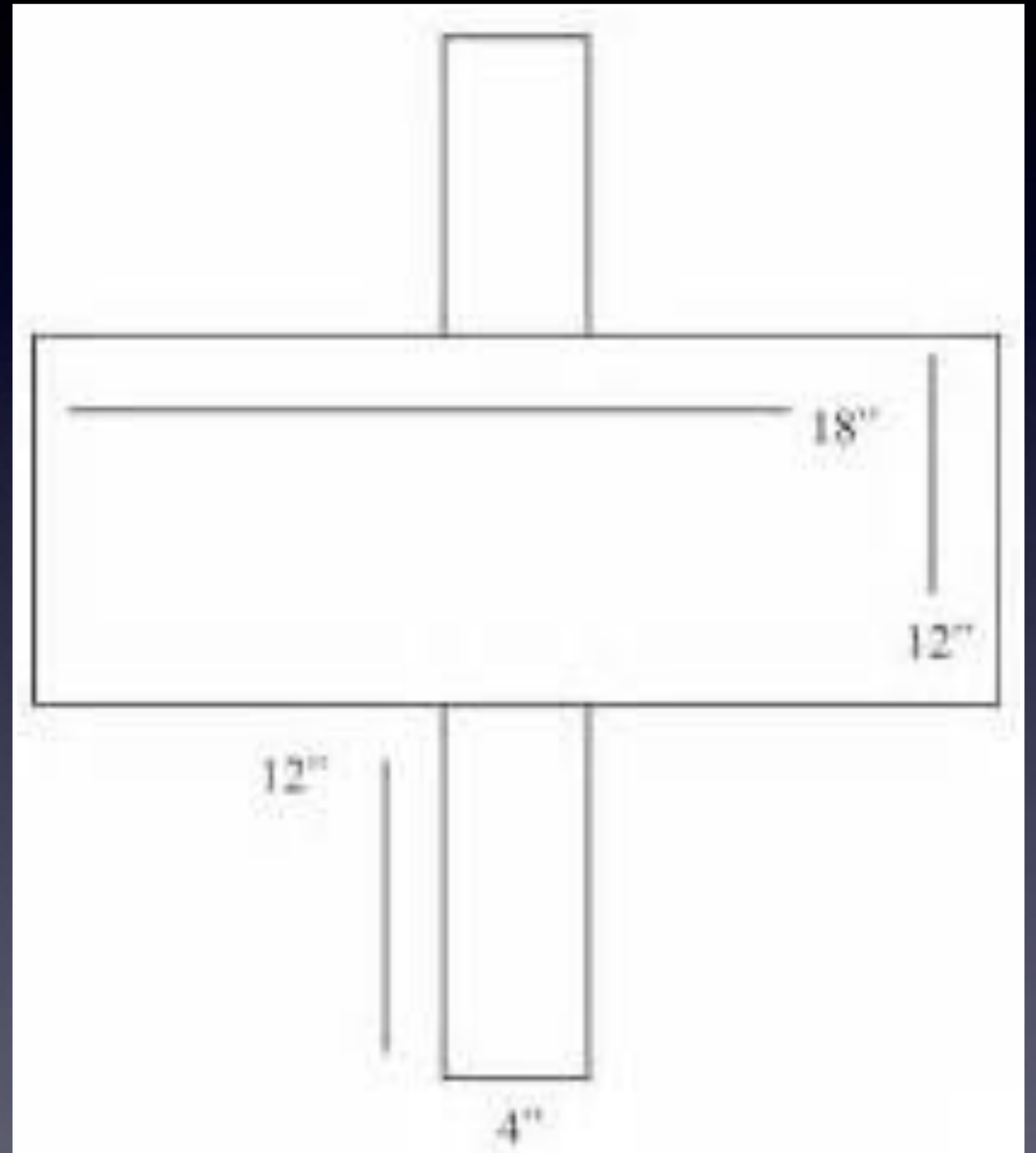


Nuggets

- The Murry Cross
- “When the arms bend the power ends”
- The 2nd Pull Must Be Faster Than the 1st Pull
- The Bergener Warm Up

The Murry Cross

- Center Block 18" W x 12" Deep
- Top and Bottom Blocks 12" Long x 4" Wide



The Bergner Warm Up

- The sequence is as follows, always in this order:
 1. Down and up
 2. Elbows high and outside
- 3. Muscle snatch
 4. Snatch land
 5. Snatch drop
 6. Hang power snatch

Thank You

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