

Fundamentals of Olympic Weightlifting

Steve Smith, Ed.D., CSCS*D, RSCC,
USAW

Associate Professor of Health and PE
Head Strength and Conditioning Coach

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Terminology

- This terminology is from USA Weightlifting

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Disclaimer

- I don't care what you call your lifts
- I respectfully provide the terminology about what I call mine so you know what I am talking about

Power Clean

- Defined by catching the bar in a $\frac{1}{4}$ squat position (a.k.a. hang clean)
- Then defined by the starting position of the bar (MT, above knee, below knee, FL, HB)

Clean

- Defined by catching the bar in a full squat position (a.k.a. power clean)
- Then defined by the starting position of the bar (MT, above knee, below knee, FL, HB)

Why OL???



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Teaching Progressions

- Start with the finishing position

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Front Squat-starting position

- Take the bar in the rack position
- Even grip slightly wider than shoulder width
- Push elbows up and in so the bar can rest on the shoulders and chest
- Feet in a vertical jump position with toes straight or slightly pointed out

AboveBeyond



LYNCHBURG
COLLEGE EST. 1903

Illustration



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Performing the front squat

- Take a deep breath
- Push hips back
- Sit down
- Keep heels in contact with the ground
- Once back to the starting position exhale

Illustration



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

RDL

- Pure strengthening exercise used in the second half of the pull for the snatch and the power clean
- Same grip width as the front squat
- Same foot position
- Bar rests across the thighs

RDL



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

RDL-

- Bend the legs slightly
- Keep chest big and back set
- Move only from the hips and lower the bar below the knees (but do not touch the ground)
- Keep muscles under constant tension
- Use hamstrings, glutes, and back and pull the bar back to the starting position
- Exhale

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

RDL-



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

RDL- Variations

- Use a snatch grip- allows the lifter to go down further
- More tension on hamstrings, gluteals, and erector spinae
- Allow lifter to stand on a block (only for advanced lifters)

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Phases of the Snatch/Clean pull in Weightlifting

Lee James, 90 Kg USA silver medalist 1976 Olympic Games



1st Pull

Transition

Shift

Scoop

Stretch !

(ends in the Power Position shown)

2nd Pull

(jump shrug or triple extension with shrug)

Advantages of the second knee bend (pictures 3-4):
(1) reduced load on the torso extensor muscles
(2) re-utilization of the hip & knee musculature through the strongest part of their range of motion
(3) elastic energy storage and stretch reflex for enhancement of the 2nd pull (pictures 4-5) thrust force

AboveBeyond



LYNCHBURG COLLEGE EST. 1903

Clean Pull

- To me...the single most important power transfer exercise
- Once technique is efficient and proficient maximum speed is critical
- Start your teaching progression from the mid-thigh

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Clean Pull

- Foot position- Vertical jump
- Toes slightly out
- Back is flat
- Arm position becomes crucial- arms straight and elbows rotated out

Clean Pull

- At this point you could use lifting straps- though there may be some different philosophies here
- Advantages- save wear and tear on the hands, can prevent premature bending of the elbows, lift more weight
- Disadvantages- not as much work on grip strength
- Could use a hook grip

Movement of the Clean Pull

- Starting from Mid-Thigh
- Lower the bar to above knee (RDL)
- In an explosive movement the lifter simultaneously utilizes four movement
 - Hip extension
 - Knee extension
 - Ankle extension
- Shoulder elevation



AboveBeyond



LYNCHBURG
COLLEGE EST. 1903

Risk/Reward

- If done properly injuries should not be an issue

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

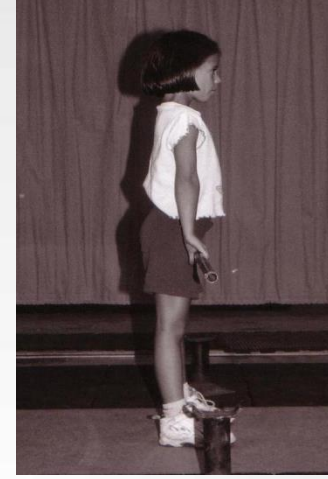
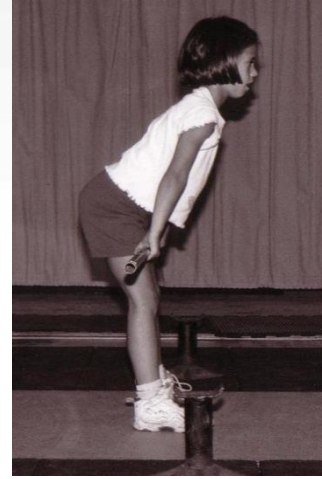
Injuries per 100 participant hours in school sports- B. Hamil

- Track and Field (USA) 0.57
- Track and Field (UK) 0.26
- Badminton (UK) 0.05
- Basketball (Denmark) 0.30
- Basketball (USA) 0.03
- Basketball (UK) 1.03
- Cross Country (UK) 0.37
- Fives (UK) 0.21
- Tennis (USA) 0.001
- Tennis (UK) 0.07
- Volleyball (USA) 0.0013
- Football (USA) 0.10
- Gymnastics (USA) 0.044
- Handball (Denmark) 0.41
- Physical Education (UK) 0.18
- **Power Lifting (USA) 0.0027**
- Rugby (AUS) 1.48
- Rugby (SA) 0.70
- Rugby (UK) 1.92
- Soccer (Denmark) 0.56
- Soccer (UK) 6.20
- Squash (UK) 0.10
- **Weightlifting (UK) 0.0017**
- **Weight Training (UK) 0.0035**

Risk/Reward

- Sports that rely heavily on wrist action (baseball, softball, tennis, etc.)

Clean Progression



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Clean Progression

- MT
- Above Knee
- Below Knee
- Floor
- HB

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

From the Floor

Hamman 190 SN Attempt – 2003 USAW Nationals



AboveBeyond



LYNCHBURG
COLLEGE EST. 1903

Basic Biomechanics

- Starting Position:
 - All Body Levers Are “Tight”
 - Set-Up of Feet Under Bar
 - Feet Slightly Turned Out and in the “Vertical Jump” Position
 - The Back Is “Flat” and Even Concave
 - Arms Are Straight and the Elbows Are Rotated Out
 - The Head Is Up and the Eyes Are Focused Straight Ahead
 - The Hips Are Higher Than the Knees
 - The Shoulders Are In Advance of the Barbell
 - Weight Distribution on Feet Changes

Basic Biomechanics

- The Pull:
 - The Barbell Moves Back Toward the Athlete
 - The Hips and Shoulders Rise at the Same Time
 - The Head Stays in a Level Position
 - The 2nd Pull Must Be Faster Than the 1st Pull
 - The Athlete Should Try To Stay “Flat-footed” as Long as Possible
 - The Arms Bend Only To Pull the Athlete Under the Bar
 - The Feet Move From a Pulling Position To a Receiving Position

Illustrated



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

First Pull



AboveBeyond



LYNCHBURG
COLLEGE EST. 1903

Scoop



AboveBeyond



LYNCHBURG
COLLEGE EST. 1903

Second Pull



AboveBeyond



LYNCHBURG
COLLEGE EST. 1903

Catch



AboveBeyond



LYNCHBURG
COLLEGE EST. 1903

Program Design

- Always warm up thoroughly
- High skill/technical lifts first
- Alternate fast movements before slow movement exercises (back squat/split squat jump)
- Save short or partial movement exercises to the end of a workout
- Examine work/rest ratio of your sport you are training
- Remember you are training for the function of your sport
- Never exceed 5-6 reps on an OL

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Training Samples

- Monday
- Warm-Up
- Snatch
- Jerk Press
- Front Squat
- Clean Pull
- Squat Jumps
- Low Back Exercise
- Abdominal Exercise
- Stretching
- Mobility Drills

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Week 1							
Session	Exercise	Percentages/Reps					
1	Snatch	50%	65%	80%			
		3 Reps	3 Reps	2 Reps x 6 Sets			
	3 Stage Snatch Pulls	70%	80%	90%			
		6 Reps	6 Reps	3 Reps x 2 Sets			
	Core Work	80 Reps					
	Stretch						
2	Snatch Pulls (HB)	50%	60%	70%	80%		
	<i>*hold for 3 sec at top</i>	5 Reps	5 Reps	4 Reps	3 Reps x 3 Sets		
	Back Squats	50%	65%	80%			
		5 Reps	4 Reps	2 Reps x 6 Sets			
	DB Press	6 Reps x 4 Sets					
	Reverse Hypers	10 Reps x 3 Sets					
3	Clean Pulls (HB)	50%	60%	70%	80%		
	<i>*hold for 3 sec at top</i>	5 Reps	5 Reps	4 Reps	3 Reps x 3 Sets		
	Back Squats	50%	65%	80%			
		5 Reps	4 Reps	3 Reps x 6 Sets			
	Snatch Grip Press	8 Reps x 4 Sets					
	<i>*sitting in full squat/behind neck</i>						
	Reverse Hyper	10 Reps x 3 Sets					
4	Power Snatch	50%	65%	80%			
		3 Reps	3 Reps	2 Reps x 3 Sets			
	Clean & Jerk	50%	65%	80%	85%	80%	85%
		3 Reps	3 Reps	2 Reps	2 Reps	2 Reps	2 Reps
	DB Straight Arm Strict Shrug	8 Reps x 4 Sets					
	Core Work	80 Reps					
5	Back Squats	50%	65%	80%			
		4 Reps	3 Reps	2 Reps x 6 Sets			
	RDLs	50%	70%	90%			
	<i>*Percent Based off Clean</i>	6 Reps	5 Reps	4 Reps x 4 Sets			
	DB Press	8 Reps x 4 Sets					

From Leo Totten

Above & Beyond

<http://www.youtube.com/watch?v=hiJ6rlQtkRw>



LYNCHBURG
COLLEGE EST. 1903

Variations



Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Thank You

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903

Questions???

- smith.s@lynchburg.edu

Above & Beyond



LYNCHBURG
COLLEGE EST. 1903