Single Leg Olympic Lifting

Michael Boyle - April 01, 2013

This article has been a long time coming. In fact it might be close to twenty years in the making. The initial impetus for this article came from Jeff Oliver, strength and conditioning coach at the College of the Holy Cross. When Jeff was my graduate assistant at Boston University we both attended Vern Gambetta's Building the Complete Athlete weekend course. This was 1990 something. We both returned with a new appreciation for the concept of single leg training and we implemented much of what we learned with our athletes. Our programs were progressive and innovative in the 1990's and probably still better than what many coaches do today.

I can still remember Jeff jumping on the platform to do a few single leg hang cleans. His rationale was “if single leg squats make so much sense, why not single leg cleans?”. My reaction was to call him crazy.

For the next fifteen years we continued with a mix of unilateral and bilateral strength exercises, gradually moving more and more in the unilateral direction. In about 2008, I took the plunge and eliminated all bilateral squats. We now do only unilateral knee dominant exercises. As I moved in this direction I became aware of a concept called bilateral deficit.

In the simplest terms, the bilateral deficit is the difference between the sums of the actions of the right and left limbs and the amount of weight lifted bilaterally.

Max Shank ‘s single leg deadlift is the perfect illustration of the concept of bilateral deficit in action. In the video clip Max does 5 single leg deadlifts with 315.

http://www.youtube.com/watch?feature=player_embedded&v=PboE7gQjklo#!

This works out to a 1 RM of about 365. Max's best deadlift is slightly less than 600, I believe at the time of the video he had done 585 for a single in the conventional deadlift. This would make his bilateral Romanian Deadlift slightly less I would guess. In any case if we assume that Max is bilaterally symmetrical simply for the purpose of calculations, the sum of Max's single leg deadlift equals 730 lbs. This is the bilateral deficit. In this case 730- 585 equals 145 lbs of bilateral deficit. You can argue the math but in my mind the point stands.

How do we explain this? The scientific explanation relates to the hemispheres of the brain. In simple terms, the body likes to work one side at a time. We can take run up run and jump off one leg higher than two. We jump off the left leg and reach with the right arm. We understand the diagonal nature of the body and handedness. Scientists theorize that bilateral contractions are actually “hemi-spherically confusing” and result in less output.

As we explored this we saw evidence over and over. The sum of right leg and left leg vertical jump are routinely higher than the combined bilateral jump. The sum of right and left handgrip is routinely higher than the bilateral grip. The evidence has been in front of us for years. As we experimented with Rear Foot Elevated Split Squats we found startling bilateral deficits as athletes became more comfortable with the lifts. The number were not even close. With my Boston University athletes *our Rear Foot Elevated Split Squat maxes projected out very close to our bilateral front squat*!

So why did it take so long to embrace single leg Olympic lifts? I could come up with a number of rationalizations. They look weird? Athletes would react negatively to these bizarre new exercises? In fact, my resistance to single leg Olympic lifts was just like everyone else's reaction to single leg strength work. Truth is I was acting just like the people I was trying to get to change.

However, what really created change was seeing the concept in action. In the summer of 2010 Boston Bruin Patrice Bergeron was a visitor in our BU weightroom. I was intrigued as I watched Patrice effortlessly hang clean 135 lbs for 5 and then proceed to do 180 for 5 in the same fashion. I went over and asked who had taught him this and he said his strength and conditioning coach in Quebec. Patrice's demo showed me that the bilateral deficit that I had spoken so strongly about in strength was also clearly evident in power. Now I do not know Patrice's 1 RM hang clean but I know I can safely assume it was less than 300. However his 180 for 5 single leg clean clearly showed us another illustration of bilateral deficit.

I had one small problem. I needed a group of good Olympic lifters to test my theory on. Fast forward to 2013. My US Hockey Women's National Team has become just that group and on day 1 they did not disappoint. I asked the players to do 5 reps at 50% of their normal loads and they did so with ease. We did one leg hang clean, 1 leg hang snatch and one leg/ one arm DB Snatch. In all cases the bilateral deficit was evident. Athletes that struggled to do 135 for 5 easily did single leg cleans with 70 for 5. The snatch results were even more glaring. Molly Schaus easily 1 leg snatched 55 lbs for 5 with a projected 1 RM of about 110.

I know you are doubting me so check out the videos and think about this quote.

http://www.youtube.com/watch?feature=player_embedded&v=cM5IXMQ2cnM

“If you have not changed your mind about something in the past year, check your pulse you may be dead.”

Frank Gellet Burgess

My friend Mark Verstegen loves to use the term “logic train”. Take the logic train with me. We have embraced single leg strength in our programs. For years we have seen the value of doing double leg jumps and single leg hops and bounds in our plyometric programs. Why has it taken us so long to embrace single leg Olympic lifts? I can only say I wish I had listened to Jeff Oliver nearly twenty years ago.

I'll finish with one more quote.

“When the student is ready, the teacher appears”. Thanks Patrice, the teacher is finally ready.