STRENGTH COACH

DRAGGING THE LINE

Increase your power and quad mass with sled pulling

By Robb Rogers, MEd, CSCS

All athletes need fitness, strength, power, speed, and endurance, albeit to different degrees. Whether you're a bodybuilder looking for another way to add mass, a powerlifter aiming to up your total, a sprinter looking for more speed endurance, or a team sport athlete looking for more acceleration and quickness, dragging a sled can be a fun, different, and highly effective way to train for these goals.

SLED BASICS

One of the earliest modes of moving loads has come back into vogue as a low tech lower body strength, power, and mass developer. Using a weighted sled and a harness to pull loads is a strong component of "dinosaur" or throwback training. All athletes need to move. Excluding sport techniques and tactics, the faster athlete with more mass and greater fitness will come out on top. As Bill Parcells said "You can have all those little quick guys. I've never seen a big guy get little in the fourth quarter."

Sled dragging is an excellent training method to increase size, add power, enhance endurance and build functional strength. Depending on whether you use a shoulder harness or a waist harness (which is closer to the center of gravity), you can load or unload yourself through your core. Depending on the load and technique you can train speed, strength, or power and the distance (or time) of the pull can be prescribed for either speed, power, or endurance as well. And depending on the direction you pull you can change the stress on your lower body from the glutes and hamstrings to the quads.

TRAINING QUALITIES

To be successful in your sport you need fitness, strength, power, speed, and endurance. And the sled can help. Everyone needs fitness, plain and simple. Fitness is the foundation upon which all other qualities are based. The longer you can pull, the heavier the load, the faster you can move, are all qualities of fitness. Fitness is trained using good quality reps coupled with adequate recovery.

Strength is the pillar of the fitness pyramid. Without strength, power and speed are impossible. According to Vern Gambetta, one of the foremost authorities on conditioning, the more load you can absorb (eccentric or negative strength) the more force you can produce (concentric or positive strength). Training for strength is the catalyst used to create power and speed and is based on the amount of weight you move, quality reps, and adequate recovery.

Power is the frame of the pyramid. Power ties strength and speed together. Power is usually thought of as the ability to move the body faster (acceleration), higher (jumping), or moving an implement quicker (bat speed) or farther (shot put). Training for power is dependent on high quality reps with extended recovery.

Speed is at the top of the pyramid. Speed is the icing on the cake. Speed can only be trained when the athlete is fit, strong and has developed a good power base. Speed is also high quality reps and extended recovery.

Endurance or your work capacity is the ability to tolerate a work-load and recover sufficiently in order to perform adequately for the next bout. Work capacity may be simple endurance such as how far (marathon) or how long (max rep pull-ups) you can perform. A more complex example of work capacity is exhibited in a tennis match when the athlete is able to perform high quality agility-mobility movements many times with only short recovery over the course of a 2 1/2 hour match.

Quality reps are reps of high speed or heavy load utilizing great technique. In the case of strength reps as in a squat it would be load and technique. An example of power reps could be a snatch, a mediball throw or a pyometric jump

executed with attention to technique. Quality speed reps are intervals above 85 – 90% of top speed with an emphasis on sprinting technique. As soon as the execution of the reps becomes sloppy, then the quality of the exercise is dropping. At that point continued execution of the drill or exercise is reaching a point of diminishing returns due to the lack of quality in the execution of the reps.

PULL IT!

The sled can be used for pulling for distance or multiple reps, either of which will enhance your fitness. The load should be moderate and the movements should be anything from a fast walk to a run. For strength don't be afraid to load up the sled with near maximal weight for slow to fast walks for relatively short distances.

Power walking with heavy loads is functional in movement or what the Russian literature refers to as Special Strength. Special strength is strength training that involves a normal movement (such as walking or running) or a sport technique (such as jumping or throwing) upon which a load is added in order to increase the strength needed to execute the movement. The load can be very heavy (as in the case of power walking) or very light so as not to change the technique needed to execute the skill or movement. In most skill drills or power movements the 10% rule needs to be in effect which basically requires you to add no more than 10% of your bodyweight to the sled in order to not change the necessary technique and mechanics involved in sprinting or acceleration. For power development the sled can be pulled from a dead stop up to full speed. For speed development the sled will need to be pulled for an additional 20-80 feet. For speed endurance the sled will need to be pulled up to 100-150 feet.

In order to change the stress on your body and develop other skills and movements, the orientation of the body will play a major role. If you turn and walk backwards or backpedal, then the quads will become the dominant muscle group used to propel you forward. If you turn sideways and shuffle, crossover or carioca, then the lateral musculature (gluteus medius, vastus lateralis and the adductors) will receive more stress than when going forward or backward. I

prefer to load my athletes at the waist, closer to their center of gravity, in order to teach them to move by propelling the pelvis/hips rather than leaning or falling into movements and leading with the head.

DRAG IT!For athletes and coaches that don't have easy access to hills and ramps the sled is a perfect way to create resisted movements for the lower body without loading the spine. Your imagination is the limit as you design drills, workouts and challenges with the sled. Whatever your approach, gains are sure to follow.

RESOURCES

1. Bompa, T. *Theory and Methodology of Training*. Dubuque, IA: Kendall/Hunt Publishing, 1983.
2. Faccioni, A. Assisted and Resisted Methods for Speed Development: Part 2. Modern Athlete and Coach 32:8-12, 1994.
3. Gambetta, V. Building and Rebuilding the Athlete Seminar Chicago IL, 1992.
4. Lockie, R.G., et al. Effects of Resisted Sled Towing on Sprint Kinematics in Field-Sport Athletics. *Journal of Strength and Conditioning Research* 17(4): 760-767. 2003.
5. Zatsiorsky, V., *Science and Practice of Strength Training*. Champaign, IL: Human Kinetics Publishing, 1995.

[Sidebar 1]

DRAGGING HOW-TO

Loading

I prefer to load at the waist in order to teach the athlete to drive movements from the hips. If you load at the shoulder with a shoulder harness, then the load is through the spine/core but the movement is initiated by leading with the head and shoulders by leaning into the harness. If you push the sled with your hands then you're usually extremely bent over at the waist. This

creates a lot of mechanical stress on the diaphragm and can cause a heavier/thicker athlete problems with breathing.

Strength

Power walking – For beginners, load the sled with a load about equal to your bodyweight.

Coaching point – with heavy loads it's critical that you plant the full foot on the ground and push through the heel with each step. If you try to push off of the forefoot, then the arch is at risk. Big arm swings, rhythmic steps and use the glutes to drive through the heels for 50 – 100 yards. If you turn the body to go backwards or sideways then pull off about 50 pounds in order to accommodate the weaker movements.

Power/Speed/Endurance

Acceleration/sprinting – Load 10% of your bodyweight onto the sled. Use the normal techniques for stance (two point, three point, four point), starts (lead step, crossover step, etc.), and emphasize sprinting mechanics. Remember, you're attempting to develop acceleration power and sprinting speed/endurance so it's best to utilize maximal rest intervals between each work bout. The starts are short (up to 20-30 feet), the sprints are longer (up to 80 feet) and the endurance training is the longest (up to 150 feet). Each rest period should be a minimum of three up to five minutes to ensure quality efforts in each work bout.

Work Capacity

According to renown Canadian track coach and author Tudor Bompa, PhD, flexibility improves day-to-day, strength week-to-week, speed month-to-month and work capacity year-to-year. Workouts that leave beginners bent over the trashcan are easy for the veterans. The key concept to understand is what type of work capacity are you targeting with the sled? Do you need strength, power, speed, endurance, or work capacity? You get what you train for. If you need more speed/quickness, don't expect to develop it with long slow pulls.

Improving work capacity is relatively easy, just do more work. You could work your way up to pulling 300 pounds for 20-50 yards for five reps. More reps, more sets, more work will improve your capacity to do work. If the rest-periods are slightly restricted, say from five minutes to four and three quarters, then four and a half, then you're setting yourself up for increased recovery abilities, a slightly different type of increase in work capacity.

[sidebar #2]

INCORPORATE SLED DRAGGING

In training our athletes we emphasize different qualities on different days. For example:

Mon	**Tue**	**Wed**	**Thu**	**Fri**
Speed	**Power**	**Recovery**	**Strength**	**Work Capacity**
Assisted Pulls	Resisted Pulls		Resisted Pulls	Circuits
Tubing Pull	Sled Pull		Sled Pull	
Starts & Sprints	Starts		Sprints & Power Walks	
Assist Up to 103-106% Top Speed	Resist Up to 10-15% Bodyweight		Resist Up to Max Load	

I have found that prescribing training programs in this format creates the best return on my athletes' time and effort. They're best rested (hopefully) on Monday for the speed training. Tuesday is power/acceleration drills and following that day with a recovery day on Wednesday helps the athletes to be eager for heavy and hard training on Thursday. After Thursday we go light (bodyweight up to 10 – 15% of bodyweight) and get a lot of work done in a short amount of time.

Types of lifts following sled pulls

Mon	**Tue**	**Wed**	**Thu**	**Fri**
Snatch Plyos	Clean Jerk Pulls	off	Squat Deadlift	Bodyweight or DB Circuits

These lifts are only some of the lower or total body lifts prescribed. Some of the other leg lifts I might assign are as follows:

Mon	**Tue**	**Wed**	**Thu**	**Fri**
3-way Lunges	Single-leg Squat	Off	3-way balance squat	DB Super Circuits With Lots Of Legs:
3-way Step–up	High Box Step–up		Box balance squat	-Lunge -Step-up -Squat jump -Split jump

Upper body lifts The upper body lifts are cycled in as they best fit. For instance:

Mon	**Tue**	**Wed**	**Thu**	**Fri**
Bench Press	Shoulder Press	Off	Incline Press	DB Circuit Push–up
DB Incline Press	Dip		DB Bench Press	
Triceps Extension	Lat-Pull		DB Floor Bench Press	
Pull–Up Lat–Pull	Inverted Pull–Ups		Row Pull–Ups	

These are examples of a four-day split routine for someone preparing for a speed strength sport such as football, rugby, or even strongman. You should do your sled work on a strength day, when you're really targeting glutes, hams, and the lower back. But how about breaking it down with an emphasis on sled

dragging where on different days you'd incorporate different sled dragging drills. So on an upper body day you might do different sled drills than on a lower body day. Break it down by drill but also address distance, load, and sets.