

# GLADIATOR TRAINING FOR GRAPPLERS

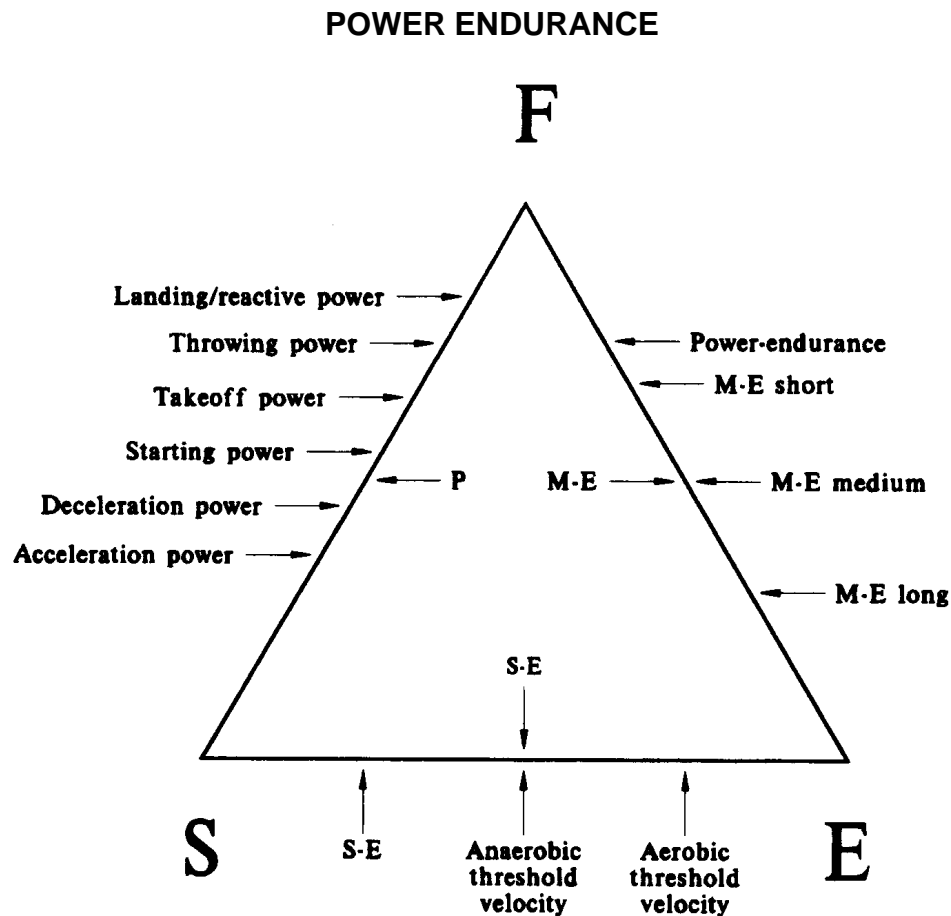
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## ABSTRACT

In this article we are going to look at “strength endurance training” and “power endurance training” designed to compliment a functional strength-training program, for athletes that participate in contact sports, where repeated efforts of maximal or near maximal efforts are required to manhandle an opponent.

I'm going to start this article by presenting a section from Bompa's book “Periodization of Strength”



**F**-Force  
**S**-Speed  
**E**-Endurance  
**P**-Power  
**ME**-Muscle Endurance  
**SE**-Speed Endurance

Power endurance is placed on top of the F-E axis because of the importance of strength for activities such as a rebounding jump in basketball, a spike in volleyball, a jump to catch the ball in Australian football, rugby, or a jump to hit the ball in soccer. All these actions are typical of power-dominant movements. The same is true for some skills in tennis, boxing, wrestling and all the martial arts. But to conclude that in order to be successful in such actions throughout the game or match, one has to train power only, will be a training error since they are performed between 100-200 or more times per game or match (the average number of jumps for spiking and blocking in volleyball is around 200 for national class players). While it is definitely important to jump high to rebound a ball, say 60 cm (24 inches), it is equally important to duplicate such a jump 200 times per game. Consequently for the above mentioned sports, both power and power-endurance have to be trained. (Bompa 1996)

## **STRENGTH ENDURANCE**

When it comes to grappling and mixed martial arts (MMA), “strength endurance” (in particular sustained isometric strength as well as concentric/eccentric strength) is just as important as “power endurance”. “Strength endurance” comes into play when working defensively eg. holding your opponent close to you to limit their striking ability while at the same time making it harder for your opponent to set up submissions, “strength endurance” also comes into play when working offensively eg. restraining and controlling your opponent.

## **SETTING UP A GOOD BASE**

If we look at setting up a periodized training program for athletes that require “strength endurance” and or “power endurance”, a good functional strength base is essential. When looking at a good functional strength base, exercises such as squats, lunges, deadlifts and their variations are required for the lower body, cycling your 5 push and 5 pull exercises are required for the upper body, along with strength work for the abdominals. These exercises are all functional movements for the human body; these exercises are also about human evolution and what the human body is designed to do and when put into a balanced program will.

- 1) Increase the overall strength of the athlete.
  - 2) Increase the core and trunk strength of the athlete, which is essential for athletes in contact sports.
  - 3) Lay the necessary foundations for the athlete to go onto more specific phases of their training plan.
  - 4) Help the athlete in preventing injuries.
- (For functional strength and our 5 push and 5 pull exercises refer to article “Making the client bulletproof”)

Once an athlete has established a good strength base, their body should be conditioned to apply force at faster rates (power training), at this point total body power exercises such as power cleans and their variations should be introduced along with other power exercises that are specific to the requirements of their sport.

## **STRENGTH ENDURANCE & POWER ENDURANCE TRAINING**

Once an athlete has a good strength base and or a power base we can look at the next phase of their training (strength endurance training / power endurance training). This training phase is about being able to apply force at maximal or near maximal intensity over longer duration's, with quicker recoveries between efforts. The biological changes that occur as a result of this type of training will depend on how much intensity the athlete applies to each effort during an interval as well as the duration of each interval. The general biological changes that occur as a result of this type of training are.

- 1) A greater aerobic capacity (ideally working around threshold pace, which is the maximal effort that you can consistently maintain over a 4- 5 minute interval).
- 2) A greater tolerance of lactic acid (working in intervals of around 30 seconds to 2 minutes)
- 3) Greater ATP-PC stores to produce repeated maximal efforts (working in intervals of up to 10 seconds)

In this section we are going to look at a circuit that I have set up for some of my clients. The exercises that I've included are either specific to the movements involved in grappling/MMA, or are useful in the development of a strong powerful body and help maintain balance in the program (remember a balanced program is one of the keys to injury prevention in long term training).

### EXERCISE 1 wheelbarrow

In this exercise the athlete picks up a weighted wheelbarrow and while maintaining good posture walks for a set time or distance.

**Major muscle groups involved** - ankle plantar flexors, knee extensors, hip extensors, all external and internal (core) trunk muscles, scapulae elevators, elbow flexors and wrist flexors & extensors.

**Sports that would find this exercise beneficial** - All contact sports where strong leg muscles and strong postural muscles are required when applying force such as wrestling, grappling types of martial arts, MMA, rugby, gridiron and Australian rules football.



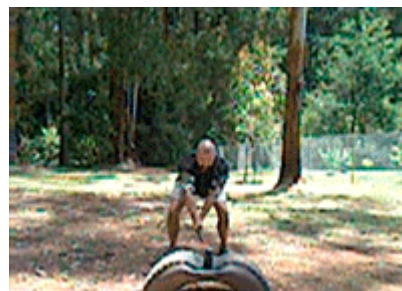
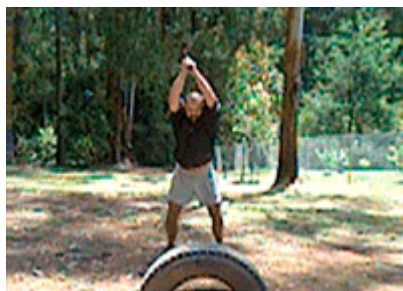
### EXERCISE 2 sledgehammering a tyre

In this exercise the athlete stands over a large truck tyre that is partly buried in the ground (1/3 of the tyre is above ground level). A sledgehammer is raised overhead then driven into the centre of the tyre.

- as the sledgehammer rebounds off the tyre, the athletes bottom hand (left hand) moves to the centre of the handle for better control
- the sledge hammer rotates around the left shoulder to the overhead position
- the left hand then moves to the right hand at the base of the handle as the sledgehammer is again driven into the centre of the tyre
- as the sledge hammer rebounds off the tyre, the athletes bottom hand (right hand) moves to the centre of the handle for better control
- the sledge hammer rotates around the right shoulder to the overhead position
- the right hand then moves to the left hand at the base of the handle as the sledgehammer is again driven into the centre of the tyre
- This sequence is repeated again and again for a set time or a set number of repetitions.

**Major muscle groups involved when driving the sledgehammer into the tyre** – trunk flexors, scapulae downward rotators/depressors, shoulder extensors, elbow extensors and wrist flexors (I haven't included the muscle groups involved in raising the sledgehammer to the over head position as there is minimal effort required compared to driving the sledgehammer into the tyre).

**Sports that would find this exercise beneficial** – Grappling sports such as wrestling, grappling types of martial arts and MMA where one of the objectives is to hip throw or shoulder throw an opponent to the ground and wood chopping (standing block).



**Exercise variations** - A variation of this exercise is to attach a tyre to a vertical pole at a height between waist and shoulder height, then swinging a sledgehammer horizontally into the tyre.

**Major muscle groups involved when driving the sledgehammer into the tyre** – trunk rotators as well as other external and internal (core) trunk muscles, scapulae protractors & retractors, shoulder horizontal flexors & horizontal extensors, elbow extensors and wrist flexors. Setting up the sledgehammer to re strike the tyre after each strike is largely set up by the recoil from the previous strike, what effort is required is minimal.

**Sports that would find this exercise beneficial** - wood chopping (under hand & tree-felling) and track and field events that have a powerful rotation component such as discus, shot put and hammer throw.

### EXERCISE 3 suplexing a beer keg

In this exercise the athlete sets himself up to power clean a beer keg, the beer keg is pulled explosively into the abdominals, as the beer keg bounces off the abdominals the athlete arches their lower back then slightly rotates to allow the beer keg to pass over their shoulder. The sequence is repeated again, this time the keg passes over the opposite shoulder. Correct technique will ensure the beer keg lands flat on the ground each time.

**Major muscle groups involved** - ankle plantar flexors, knee extensors, hip extensors, trunk extensors and rotators as well as other external and internal (core) trunk muscles, scapulae elevators/upward rotators, shoulder flexors, elbow flexors and wrist flexors & extensors.

**Sports that would find this exercise beneficial** - Wrestling and MMA.



**Exercise variations** – power clean or a power clean & push press

**Major muscle groups involved** – power clean, same as suplex with less emphasis on trunk rotators. Push press, greater emphasis on the scapulae elevators/upward rotators & shoulder flexors, elbow extensors and wrist flexors & extensors.

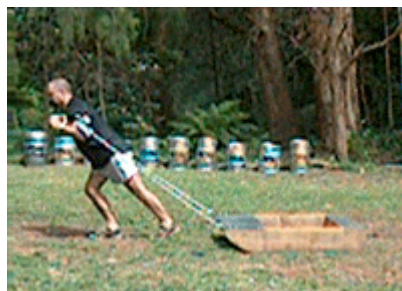
**Sports that would find this exercise beneficial** - any sport that utilises dead lifts and/or power cleans as a part of their strength & conditioning program

### EXERCISE 4 dragging a sled

In this exercise a heavy sled is used, upper arms are abducted 45 degrees and in line with the trunk, athlete pulls the sled for a set time or distance.

**Major muscle groups involved** - ankle plantar flexors, knee extensors, hip extensors, trunk flexors as well as other external and internal (core) trunk muscles, scapulae protractors, shoulder flexors & horizontal flexors, elbow extensors and wrist flexors & extensors.

**Sports that would find this exercise beneficial** – All contact sports where driving forwards to make distance or driving forwards to tackle an opponent is required, sports such as wrestling, grappling types of martial arts, MMA, rugby, gridiron and Australian rules football.





**Exercise variations** – A light sled can be used for resistant sprint work, the sled can either be dragged by the same method used to drag a heavy sled, or attached to a harness by a single length of rope.

**Major muscle groups involved when using a pair of handles** - ankle plantar flexors, knee extensors, hip extensors, trunk flexors as well as other external and internal (core) trunk muscles, scapulae protractors, shoulder flexors & horizontal flexors, elbow extensors and wrist flexors & extensors.

**Major muscle groups involved when using a harness** - ankle plantar flexors, knee extensors, hip extensors, trunk flexors as well as other external and internal (core) trunk muscles.

### **EXERCISE 5 bridging a beer keg**

In this exercise the athlete lies supine on the ground with the knees pointing upwards and their heels close to their backside, a beer keg is placed on their abdominals, the athlete holds the beer keg steady and bridges upwards until there is a straight line from their knees, through their hips, to their shoulders. Bridging is repeated for a set time or a set number of repetitions.

**Major muscle groups involved** - hip extensors and all external and internal (core) trunk muscles.

**Sports that would find this exercise beneficial** - Wrestling, grappling types of martial arts, MMA.



### **EXERCISE 6 flipping a tractor wheel**

In this exercise the athlete adopts a deep squatting/deadlift stance and places their hands under the wheel. The athlete then performs an explosive deadlift, at the end of the leg drive the momentum carries over to the upper body where the athlete elevates the shoulders at the same time flexing the elbows to raise the wheel as high as possible, at the peak of the lift the athlete squats under the wheel enough to change the hands from a supine grip to a prone grip, then using leg drive created from the squat, the athlete then incline presses the wheel flipping it over. Flipping the tractor wheel is repeated for a set time, a set number of repetitions or can be flipped over continuously for a set distance. (Flipping a tractor wheel has a similar action to a power clean).

The tractor wheel that I use has a rim but no centre hub and therefor is a fixed weight.

Most tractor wheels however have a centre hub, this means a steel plate the same diameter as the rim can be made up which can then be bolted to the hub, additional weight can now be placed between the steel plate and the hub.

**Major muscle groups involved in lifting the tractor wheel to the catch position** - ankle plantar flexors, knee extensors, hip extensors, trunk extensors as well as other external and internal (core) trunk muscles, scapulae elevators, shoulder flexors, elbow flexors, wrist flexors

**Major muscle groups involved in flipping the tractor wheel over** - ankle plantar flexors, knee extensors, hip extensors, trunk extensors as well as other external and internal (core) trunk muscles, scapulae protractors, elbow extensors and wrist flexors.

**Sports that would find this exercise beneficial** - This exercise is used in some "Strong Man" competitions and is an excellent form of variety from your traditional dead lifts and/or power cleans and therefor would suit any sport that utilises dead lifts and/or power cleans as a part of their strength & conditioning program.



### **EXERCISE 7 pulling a sled from a stationary position**

In this exercise a light sled is used which is attached to a 50 meter rope, knots are tied along the rope at regular intervals (approximately 80cm apart) to help the athlete grip the rope and to give the athlete a measured distance for which to apply force. The athlete stands upright in a stable stance with a slightly lowered centre of gravity, spine in the neutral position. A continuous fluent action is required without stopping as the athlete pulls the sled towards them until they run out of knots/rope.

**Major muscle groups involved** - ankle plantar flexors, knee extensors, hip extensors, trunk extensors and rotators as well as other external and internal (core) trunk muscles, scapulae retractors, shoulder extensors, elbow flexors and wrist flexors.

**Sports that would find this exercise beneficial** – MMA and other forms of grappling martial arts where pulling an opponent towards you to control them is required, as well as athletes involved in rowing, canoeing, kiacking and surf skiing.



### **EXERCISE 8 the human monkey bars**

This exercise is performed with a training partner. Partner A stands upright in a stable stance with a slight bend in the knees to lower their centre of gravity and places their hands on the top of their head with their elbows pointing out laterally. Partner B hops on partner A in the piggy back position, wrapping their legs tightly around partner A's waist and crossing their ankles, while at the same time hanging onto partner A's arms, partner B the slowly works their way around partner A's body until they have done a full rotation, then partner B does another full rotation in the opposite direction. Small and precise movements are required by partner B to help partner A keep their balance. This sequence is repeated for a set time or a set number of repetitions.

**Major muscle groups involved for partner A** - ankle plantar flexors, knee extensors, hip extensors, all external and internal (core) trunk muscles, scapulae protractors & retractors, shoulder abductors, horizontal flexors & horizontal extensors, neck flexors, extensors & lateral flexors and elbow flexors.

**Major muscle groups involved for partner B** - hip adductors & extensors, scapulae downward rotators & depressors, shoulder adductors, elbow flexors and wrist flexors.

**Sports that would find this exercise beneficial** – (Partner A) all sports that require intense external and internal (core) trunk conditioning. (Partner B) MMA and other forms of grappling.





## ORDER OF EXERCISES

The order in which you perform these exercises comes down to “what do you want from your training?” To put maximal effort into each exercise you need to super set the exercises, eg. agonist and antagonist or upper body and lower body. I set out my circuit in the following order.

- 1) Wheelbarrow
- 2) Sledgehammering the truck tyre
- 3) Suplexing beer kegs
- 4) Dragging a heavy sled
- 5) Bridging a beer keg
- 6) Flipping a tractor wheel
- 7) Pulling a light sled from a stationary position
- 8) Human monkey bars

## DURATION OF INTERVALS

The duration of each interval once again comes down to “what do you want from your training?” I measure my intervals in repetitions and distance travelled, this suits me largely due to the size and shape of my property, you can also use a set time period for each interval.

## REST PERIOD BETWEEN INTERVALS

The rest period between intervals once again comes down to “what do you want from your training?” Because I super set the exercises I encourage no rest between intervals to keep the heart rate elevated, ensuring a good cardiovascular workout.

## NUMBER OF CIRCUIT REPEATS

How many times the circuit is repeated once again comes down to "what do you want from your training". You must take into consideration the duration of the intervals, the intensity of the intervals and the rest periods between the intervals, remember volume and intensity have an inverse relationship, if the length of your intervals are short because the intensity is high, the number of circuit repeats are going to be low.

## BENEFITS OF THIS TYPE OF TRAINING

- 1) Nearly all of the exercises included in this circuit involve concentric contractions only, this means you can increase your training volume if you need to and as there are minimal eccentric contractions, you'll find that your body will recover quicker.
- 2) Most of the exercises performed in the circuit require whole body efforts which are more specific to the needs of grappling/MMA, rugby, gridiron and Australian rules football than alot of traditional weight training exercises, this means more specific biological changes occurring within the athletes body that will help improve their sporting performance.
- 3) As well as “strength endurance” and “power endurance” this type of training is an excellent cardiovascular work out.



- 4) Allot of the exercises performed in the circuit are great for developing grip strength which is important for grapplers/MMA. Additional finger strength is also important for rugby, gridiron and Australian rules football, as it can help reduce the occurrence of stubbed fingers and dislocated fingers
- 5) All the exercises in this circuit are excellent for developing both core strength and strength in the surrounding trunk muscles.
  - a) Exercises such as dragging a heavy sled and pushing a weighted wheelbarrow are beneficial in developing the athletes core and surrounding trunk muscles in a dynamic environment, (which is important in contact sports) rather than working the same muscle groups while standing still.
  - b) Sledge hammering is another exercise for the core area as well as an excellent power work out for the abdominals.
  - c) Bridging a beer keg is another abdominal and core work-out, the abdominal muscles contract isometrically to stop the weight of the beer keg from squashing the internal organs
  - d) The human monkey bars is an excellent core and surrounding trunk muscle workout for partner A (and leg workout too).
  - e) Suplexing, power cleaning, or power cleaning & push pressing a beer keg is another lower back and core workout along with flipping a tractor wheel and pulling a sled off a 50-meter rope.

## **EQUIPMENT USED**

### **BEER KEGS**

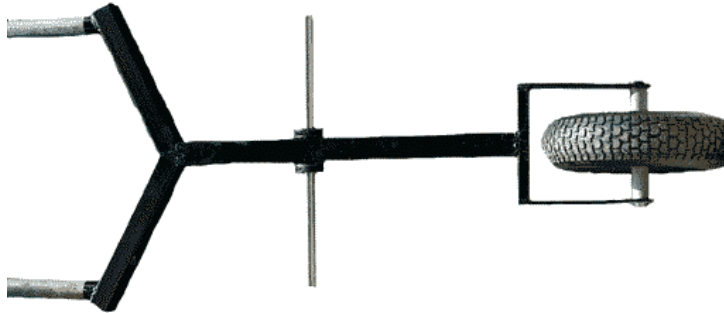
- a) Beer kegs are excellent for outdoor training, they are stainless steel and made to be knocked around (being stainless steel, they can be left outside permanently).
- b) They are designed to be manually handled on a regular basis so they are manufactured with a rolled edge both top and bottom for easy handling.
- c) The weight of an empty beer keg is approximately 15 kg; the capacity of a beer keg is 50 litres therefore when using water you can set the weight your beer kegs between 15 kg and 65 kg. If you need more weight you can use a sand and water mix or for a much heavier weight you can use sand only.
- d) When beer kegs are only partly filled with water or sand and water, the contents inside the beer keg moves around when the beer keg is being handled making the beer keg a little unstable, this inturn has an added advantage of adding a stability component to your training.



### **WHEELBARROW**

Wheelbarrow is made of 50ml box steel with a 25ml solid bar to slide weights onto. Wheel is a large standard wheelbarrow wheel.





### **SLEDGE HAMMER & TYRE**

Tyre is a large truck tyre buried 2/3 into the ground. Sledgehammers are generally purchased in two sizes 8lbs & 10lbs.



### **SLEDS**

I've made 2 sleds for my circuit,

One is a large heavy sled for dragging; it's made from 200ml x 50ml treated pine sleepers with a skin made from galvanised iron. The other sled is a smaller and lighter sled made for pulling with a long rope and would also be suitable for sprint work (attached to a weight belt), this sled is made from 150ml x 40ml treated pine with a skin made from galvanised iron

The sleds, like the beer kegs are designed to stay out doors, the weights that are used for the sleds are blue stone blocks that have been individually weighed with the weight painted on them (which are also designed to stay outside)



## TRACTOR WHEEL

The tractor wheel that I use is an old type that is large and very wide with an approximate weight of 150+kg. For safety reasons the tractor wheel is tied to a large tree just in case it gets away when being flipped.



## CAUTION

When selecting exercises that involve the use of sledgehammers, beer kegs, tractor tyres, sleds and other equipment not generally used in traditional resistance training, you'll find that if you search around there are hundreds of different exercises you can perform with this type of equipment. When choosing your exercises, choose wisely and not because of the novelty, make sure the exercises your are about to give your athletes are safe and specific to their needs.

## REFERENCES

T.O.Bompa (1996): Periodization of Strength (4<sup>th</sup> edition)  
Chapter 2 Strength and its relationship with other biomotor abilities.  
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