

# Training for Grappling Sports

By

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With all the publicity and increased popularity of Mixed Martial Arts over the past decade, it is no wonder why some experts are predicting this sport to become one of the most popular sports on the planet in the next 10 years. With its white knuckle unpredictability, to the tremendous physical demands it places on the athletes, it is no wonder combat/grappling sports may be the wave of the future.

Many of these athletes are setting the standard for what it means to be “in shape”. Whether it be grueling strength circuits, unimaginable metabolic conditioning sessions, or brutal skills sessions, these athletes are pushing the boundaries of physical preparation.

The unpredictable nature of this sport forces the athlete to be prepared for any and all aspects of physical combat including striking, takedowns and takedown defense, grappling, clinching, conditioning/muscle endurance, and last but not least, strength and power. The skills and conditioning/muscle endurance training can be seen at many academies/schools across the globe. These athletes are getting in shape with minimal equipment through bodyweight circuits, sprinting and long distance endurance training, as well as live skill practice. All these play a critical role in the development of any grappling competitor. Often overlooked though is the development of true functional strength and power.

In this case, the term functional strength can simply be classified as “usable” strength. In other words strength that can be easily transferred to increase one’s ability in their sport. With a strong foundation of strength, one can then increase their potential for increased rate of force development, or (in English), Power.

Too often nowadays, athletes engaging in grappling/wrestling based sports depend almost entirely on bodyweight or kettlebell circuit training along with long distance running or sprinting as their primary methods of physical preparation (and live skill practice) for grappling sports. Besides risk of injury due to repetitive trauma from overloading patterns, these athletes run the risk of developing structural imbalances, under developing strength/power, and overdeveloping type I (slow twitch) muscle fiber content, at the expense of type II (fast twitch ) muscle fibers.

Common rationale of grappling competitors not wishing to engage in strength training may include:

- *I don't want to get too big and bulky as this will slow me down*
- *I need to make sure my cardio does not get worse*
- *I am worried I won't be able to make weight*

- *I don't want it to decrease my flexibility*
- *I need to make sure my cardio is good*
- *You need to run (long distance that is) because that is what we have always done*
- *I don't want to get hurt*
- *I need to do more cardio....*

Let's try to shed some light on each of these.

1. ***I need to do more cardio:*** Cardio, cardio, and more cardio seem to be a rallying call for many fighters and grappling competitors. The last thing one wants to do is fatigue, as "fatigue makes cowards of all men". Why is it so many grappling athletes believe running will give them better endurance for grappling? That is just like saying that marathon runners would benefit from live grappling to increase their marathon performance. Does long distance running or long duration endurance training truly transfer to actual competition endurance, as the energy systems required for each are quite different (in most cases)? For many grappling athletes, wouldn't it make sense to get their cardio by, well, live grappling or energy systems specific metabolic conditioning workouts? For more on some of the negative effects of long endurance training check out this article on [Excessive Endurance Training](#).
2. ***I don't want to get too big and bulky:*** Yes genetic freaks, you know, the guys that just look at a barbell from across the room and get bigger, may have to worry about this (though it is typically quality muscle that they are adding), but for the average person, unless dietary modifications are made, bulk may be much harder to come by. Besides, wouldn't adding quality muscle to one's frame increase their potential for explosive power!

Athletes that need to worry about adding bodyweight when engaging in strength training can utilize relative strength training methods and functional strongman training methods to ensure minimal gains in sarcoplasmic hypertrophy while maximizing gains in strength per pound of bodyweight.

3. ***I don't want to negatively affect my flexibility:*** Hmmmm, you can spend an hour doing static stretching or, you could kill two birds with one stone and perform full range of motion strength training. Walk into any large chain gym and you may see half chin-up variations, half squat/split squats, half dumbbell bench presses, etc... and these athletes wonder why their flexibility is awful and they need to engage in multiple static stretching sessions per week. Besides, with proper range of motion and antagonistic muscle group training (see Charles Poliquin's Structural Balance testing at [www.charlespoliquin.com](http://www.charlespoliquin.com)) an athlete can ensure "proper" range of motion throughout a joint as there is equal balance (tightness  $\leftrightarrow$  weakness) between opposing muscle groups.

4. ***I don't want added muscle to slow me down:*** Isn't muscle the connective tissue that pulls bones into motion? Well the stronger that muscle gets, wouldn't it be able to pull the bones with more force? With greater force, isn't the potential for power increased? Power is basically the rate at which one can develop force. So the less time you can develop greater force, the greater your acceleration. Think about it, if you want to make a car faster, isn't the simplest method to put more horsepower in the motor?

The simplest way to debunk the myth about strength training for grappling/combat athletes is to watch an athlete whom has spent a considerable part of his life developing his strength through conventional and functional strength training compete in an MMA competition. Remember, many grappling/combat athletes are concerned about **1.** Losing explosiveness due to too much muscle, **2.** Fatiguing too quickly due to increases in muscle development and **3.** Lacking endurance due to less long duration cardio training. Well, watch [this video](#) of the current reigning Met-Rx World's Strongest Man, Mariusz Pudzianowski competing in a professional MMA fight.

Ouch. All that conventional and functional strength training he has done over the years didn't really seem to slow him down or decrease his power at all. In fact it is quite the opposite. Regarding his cardio, he didn't even get a chance to test it as his opponent appeared to have no answer for his tremendous strength and power. Yes, it is not every day that one will be competing against the strongest man in the world, but his training approach and methodology show the incredible benefits that conventional and functional strength training can have on grappling/combat sports.

## **Anatomy of Grappling Sports**

In any team sport it can be difficult to target select muscle groups in which athletes need specific training protocols to maximize their on field performance. Common Structural imbalances can occur though, giving the strength coach a roadmap toward strengthening an athlete's weak links. One sport in which it is quite possibly the most difficult to target a particular muscle or group of muscles due to the chaotic nature of the sport, is grappling/combat sports.

Whether it be pushing, pulling, or twisting from a standing position, to the same biomechanical patterns from a laying position, grappling sports do not allow for an athlete to have any weak muscles groups. Typically the stronger athlete with better technique and stamina wins out. With that said, it seems too many athletes still engage in the wrong training methods to enhance their performance on the mat.

For instance, understanding that strength and power plays a critical role in these sports, why is it we still see many a grappler performing long slow distance running along with muscle endurance based bodyweight training programs. The long slow distance training is targeting their cardiovascular system and slow twitch muscle fibers, at the expense of higher threshold fast twitch fibers. While the muscle endurance bodyweight exercise may seem like a good idea, used solely as a training technique, it is primarily a muscle endurance, not strength, based protocol.

Generally it can be difficult to say which muscle/muscle groups are of greater importance in training for grappling sports. With so many different possibilities, one could browse through an entire anatomy book and find some way in which the bulbo spongiosis is even trained in grappling (just kidding).

### **Spinal Erectors**

This is a common link amongst many sports. Especially in grappling sports, the low back extensors will allow for greater upright stability, throwing/lifting power, and even generation/transfer of kicking and striking force. An athlete with very strong low back extensors may also have an advantage on the mat as their pulling strength can allow them to control position.

1. **Iliocostalis** (Lumborum, Thoracis, Cervicis)
2. **Longissimus** (Lumborum, Thoracis, Cervicis)
3. **Spinalis** (Lumborum, Thoracis, Cervicis)

### **Grip Musculature**

You ever shake someone's hand that had world class grip strength. You know they are strong and probably a tough sunofbit. Grip strength is a limiting factor in many strength based activities as the load that the low back extensors or legs can maintain may be far greater than the load potential of the forearm flexor musculature.

The forearms contain 23 different muscles, "" of flexors and "" of extensors. Each of these plays a critical role in sports as

#### **Forearm Flexors**

1. Flexor Digitorum Superficialis
2. Flexor Digitorum Profundus (4 heads)
3. Palmaris Longus
4. Flexor Pollicis Longus
5. Flexor Carpi Ulnaris
6. Flexor Carpi Radialis

#### **Forearm Extensors**

1. Extensor Digitorum
2. Extensor Pollicis Brevis
3. Extensor Pollicis Longus
4. Extensor Carpi Radialis Longus
5. Extensor Carpi Radialis Brevis
6. Extensor Carpi Ulnaris
7. Extensor Digiti Minimi
8. Extensor Indicis

Brachioradialis

## Elbow Flexors

Any sport that involves controlling an opponent, lifting from a hugging type position, or pulling an opponent toward you will involve activation of the low back, mid back, and..... the elbow flexor musculature. Wonder if this is why so many grapplers are so good at chin-ups? The elbow flexors play a critical role in these sports as they allow for generation/transfer of pulling forces from standing position and controlling forces from laying down positions.

With all the pulling motion that occurs in grappling sports, it can be easy to see why many grapplers can develop rounded shoulders and slightly flexed elbow musculature. A combination of tightness in the elbow flexors and weakness in the elbow extensors, in other words, an imbalance in the structure of one's upper arm musculature can occur. For that reason, elbow extensor training is highly critical for grapplers in order to avoid structural imbalances which may lead to potential injuries.

Biceps Brachii (long head, short head)

Brachioradialis

## Upper/Mid Back Musculature

Besides the low back and elbow flexors, this muscles group is critical in ground control and upright pulling. These muscles are critical in maintaining shoulder stability and posture. Without proper structural alignment in the shoulders, an athlete may lose range of motion, power, and in some cases dramatically increase potential for injury.

Trapezius (Upper and Mid Fibers)

Rhomboids

Rotator Cuff Musculature

Lattissimus Dorsi

## Neck Musculature

Don't think I have ever met a wrestler with a weak neck. From bridging to escaping, the stronger a grapplers neck the better.

Sternocleidomastoid (Anterior and Posterior Fibers)

## Hip Extensors

Unless you grew up on a farm in Idaho, lifting bales of hay and potato sack since you were born, your low back may be at risk for injury if you try to throw or lift an opponent without using your primary hip extensors: **gluteal musculature and hamstrings (don't' forget the adductors are also hip extensors).**

## VMO

Vastus Medialis Obliquus. It is quite often that we have wrestlers/fighters come in to APECS with little or no VMO activation or definition. Possibly from all the long distance running and half squats. The VMO is a major stabilizer of the knee, along with the hamstrings (flexor of the knee attachment) on the backside of the leg.

## Time to Train

Below are 10 (in no particular order) highly effective exercises for the development of a well rounded, functionally strong and powerful athlete engaging in combat/grappling sports. Besides structural balance weight training (i.e.: rotator cuff work, VMO/hamstring training, etc...) these exercises can make dramatic differences in a combat athlete's ability to transfer their strength from the weight room to the mat.

1. **Tire Flipping:** Often, after a difficult tire session, athletes will not only experience posterior chain soreness, but also intense forearm flexor soreness for the next couple of days. Think about it, an exercise in which you are working your extensor muscles during the initial lifting phase, and then your anterior pushing musculature to drive the tire forward and down for the next flip, all the while increasing grip/forearm flexor strength. Be sure your technique is correct, as many athletes perform a sumo-style deadlift type movement, when in actuality tire flipping is a



forward motion with hands wider than feet and feet below (or somewhat behind) hips. This ensures maximal hip extensor activation with minimal risk of low back or bicep injury. The benefits for grappling sport are obvious, as low back, hip extensors, elbow flexors, shoulders, "core", and grip strength are all engaged during this valuable exercise.

2. **Super Yoke:** By focusing their time and effort on more efficient means of training, athletes can achieve a greater transfer of training effect. The methods should be upright standing, load bearing, and preferably dynamic. Recently, an excellent study by Dr. Stuart McGill and colleagues, set out to establish trunk musculature activation of Strongman training modalities. Dr. McGill and his team found tremendous supporting evidence toward the usage of upright loaded strongman exercises and transferable activation of the "core" musculature. Peak muscle activation of the rectus abdominis, internal and external obliques was found in all of the events, but was found to be **highest in the walking phase of the Farmer Walk, Super Yoke Walk, and the Suitcase Carry (1)**. For a more in-depth look at vertical core training and the super Yoke check out the article Rethinking Core Training.

3. **Atlas Stones:** Think of lifting your opponent for a throw. In most combat sports there is a rotational component to throws, but hip extensor power combined with an iron grip ensures



success. Atlas stones are a tremendous tool for strengthening the entire posterior chain as well as elbow flexors, core, and grip strength. The ability to lift this “dead” weight and “pop” one’s hips to elevate the stone onto or over a predetermined weight can have a tremendous transfer to any grappling/combat sport.

4. **Deadlifts (or Axle Pulls if you have access to one):** Tal about bang for your buck exercise which you can perform at any gym, with just 2 pieces of equipment: a bar and some plates. Check out [this article](#) strength coach extraordinaire and mentor Charles Poliquin wrote on dead lifting for a more in-depth analysis of the importance of this exercise.



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5. **Olympic Lifts:** Hip extensor power is critical to almost any movement in sport. The ability to generate force about the hips can separate the good athletes from the great ones. Watching the Olympics, one can easily underestimate the power a heavyweight Olympic weightlifter possesses due to their incredible bulk and lack of lean muscle development. Did you know that the average heavyweight Olympic weightlifter can snatch, and vertical jump. All that at a bodyweight of . Think about it. The average vertical jump of an NFL linebacker combine prospect is , at a body weight of ...



6. **Farmer Carries:** Grip strength/endurance, core strength, lower extremity training, upper back and shoulder strengthening, adaptations to load bearing throughout the hips and lower extremities, etc... All of these can lead to transferable effects on one’s functional strength in competition and on the mat.



7. **Rope Pulling or Climbing:** Take a 50 foot 2-3” diameter rope and attach 300lbs to the end of it and pull hand over hand (sitting or standing with fee planted on the ground) as fast as you can. Besides the screaming musculature throughout one’s body, the lungs feel as if you have just sprinted a 400 (uphill). From grip to elbow flexors, to low back and legs, this simple but taxing exercise can build mental toughness along with all its functional strengthening benefits.
8. **Sled Dragging:** This versatile tool allows for forward, backward, and lateral pulling. It can be used as a strengthening, rate of force development, or metabolic conditioning tool. Whether training distance, speed, explosiveness, or strength, the benefits for the combat/grappling athlete can numerous.

**9. Keg/Sandbag Loading:** Carrying and loading asymmetrical objects has been shown to recruit up to 132% greater rectus abdominis activation than stationary standing exercises (Anderson et al 2007). What is the significance of this for the grappling/combat sports competitor? Perhaps increasing efficiency of one's training by incorporating this method of training. While walking with an asymmetrical object, not only are you strengthening your lower extremities, upper and lower back, grip, and elbow flexors, but your abdominal musculature is working overtime to maintain spinal pressurization to keep the torso upright. Done for time or in medley fashion, this can be an excellent cardiovascular workout.

**10. Prowler Pushes:** What grappling/combat sport competitor wouldn't want to increase their ability to generate greater amounts of force in the anterior horizontal direction. From single leg to double leg takedowns, the ability to explode forward/horizontally and drive your opponent either down into the mat or upward into the air can mean the difference between winning and losing in any combat/grappling sport. Not only can the prowler be used as a training tool for rate of force development and functional strength in the horizontal plane, but it can also be utilized as a gut wrenching metabolic conditioning tool.



If you are a combat/grappling sports competitor looking to gain a serious competitive edge, engaging in functional strength and power training through the use of modified strongman training methodologies may be for you. If you currently do not have access to this type of equipment it may be worthwhile to find a new home for your physical preparation training. For instance it is no coincidence that here at [APECS](#), we have had the opportunity to work with multiple state and New England Champion wrestlers, professional and golden gloves boxers, judo players, and successful MMA competitors. By providing these athletes with world class training methodologies ([check out world renowned strength coach Charles Poliquin's PICP program](#)) and program design, as well as practical equipment for the development of functional strength and power, these athletes are seeing tremendous results both on and off the mat. Below is just a sampling of the equipment these athletes have access to on a daily basis:

- 30 Yard Turf for walking, carrying, dragging, pushing, flipping, etc...
- 18 Atlas Stones (106lbs →375lbs) with stone platform heights from 36"→72"
- 4 sets of Farmer Carry Handles
- 2 Super Yokes
- 3 Dragging Sleds
- 8 Tires ranging from 150lbs→900lbs
- 50ft 2.5" diameter rope
- 3 Logs ranging from 60lbs →190lbs

- 3 Sandbags
- 9 Kegs ranging from empty →300lbs
- 3 Olympic Weightlifting Platforms with full sets of Olympic bumper plates
- And much more...

Enjoy, work, and .....Succeed!!!

#### References

1. Anderson A, Meador K, McClure J, Makrozahopoulos D, Brooks D, Mirka G. **A biomechanical analysis of anterior load carriage.** *Ergonomics.* 50(12); Pp 2104-2117. 2007.
2. McGill S, McDermott A, Fenwick C. **Comparison of different strongman events: trunk muscle activation and lumbar spine motion, load, and stiffness.** *Journal of Strength and Conditioning Research.* 23(4); Pp 1148-1161. 2009.