

GRIP STRENGTH TRAINING

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ABSTRACT

In this article we are going to look at the various components to grip strength training, the equipment needed to target the various components of grip strength training (most of which you can make your self quite cheaply) and additional exercises that will either assist in strengthening the muscles involved in gripping or help to balance out a grip strengthening program.

Components to grip strength training

When looking at increasing the strength of your grip, there are three specific components that you need to consider.

- 1) **Static handgrip strength** – isometric exercises where the entire hand is used to apply force when gripping objects
- 2) **Static pincer grip strength** – isometric exercises where the last digits of the fingers and thumbs are used to apply force when gripping objects.
- 3) **Concentric and eccentric hand strength** – exercises where the entire hand is used to apply force in a crushing manner.

Exercises for static handgrip strength

Equipment needed

- 2 x 50-ml diameter pieces of steel pipe 160 ml long.
- 2 x 75-ml diameter pieces of steel pipe 160 ml long.
- 2 lengths of chain 400-ml cm long.
- 2 lengths of chain 650-ml cm long.
- 4 spring clips.



If regular weight discs are used, the chain needs to be wide enough to just fit through the standard 1-inch hole in the centre of the weight disc, if olympic weight discs are used, the chain can be a larger diameter. For added grip, paint the steel pipes with one coat of paint (don't use an aerosol paint), while the paint is wet, lightly sprinkle dry sand over the painted area (not brickies sand), when the paint is dry add another coat of paint. Combining the paint and sand gives the steel pipes a sandpaper texture making them easier to grip.

- 1) The small piece of chain is threaded through the pieces of pipe and then both ends of the chain are connected together with a spring clip.
- 2) The long pieces of chain are threaded through the hole in the centre of the weight discs that you are attempting to lift, the two ends of the chain are connected together with a spring clip.
- 3) The spring clip from the handle is then connected to spring clip that is attached to the weight discs.



- 4) You then hold the handles in your hand and from a standing position lift the weights off the ground (in a similar action to a deadlift), attempting to either lift the maximal load that your grip strength will allow you to lift or lifting sub-maximal loads and holding for a set length of time.



The different size handles (50-ml & 75-ml) will ensure that your static hand grip strength will improve over a greater range of motion. There is little benefit in making 25-ml handles as all regular BB's and DB's are approximately 28-ml in diameter.

Exercises for static pincer grip strength

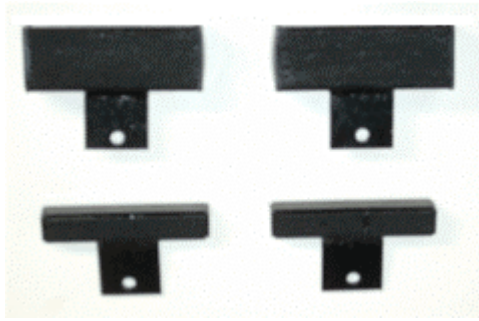
Equipment needed

- 2 pieces of box steel 25-ml wide x 120-ml long.
- 2 pieces of box steel 50-ml wide x 120-ml long.
- 4 pieces of steel strap 50-ml x 50-ml x 3-ml thick.

The 4 pieces of steel strap have a hole drilled for the spring clip to go through, the pieces of strap are welded exactly in the centre of the pieces of box steel. For added grip you can use the same paint and sand method described previously for your static grip handles.

I have made my pincer grip handles in two sizes, 25-ml thickness and 50-ml thickness. I have found that there is little benefit in making pincer grip handles any thicker, as the 75-ml static handgrip handles predominantly uses pincer grip strength due to the wide spreading of the hands.

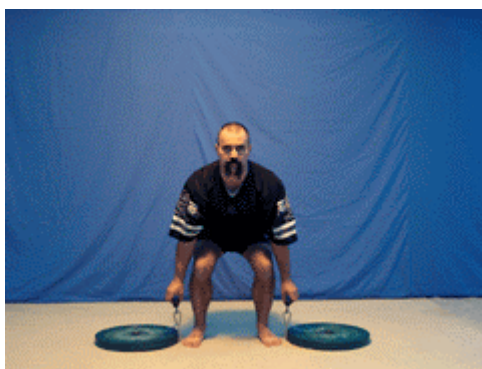
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- 1) Spring clip is attached to the handle through the centre hole.
- 2) The large pieces of chain are threaded through the holes in the centre of the weight discs that you are attempting to lift.
- 3) The spring clip from the handle is then connected to the chain that is threaded through the weight discs.



- 4) You then hold the handles using a pincer grip (using only the last digits of your fingers and thumbs) and from a standing position lift the weights off the ground (in a similar manner to a deadlift), attempting to either lift the maximal load your pincer grip strength will allow you to lift, or lifting sub-maximal loads and holding for a set length of time.



Exercises for concentric and eccentric hand strength

For this type of training I recommend the use of handgrippers.



There are many types of handgrippers on the market that come in various tensions and are all suitable for this type of exercise

Heavy Grips 100-lbs, 150-lbs, 200-lbs, 250-lbs & 300-lbs.

RB Handgrippers 70-lbs, 100-lbs, 130-lbs, 160-lbs, 180-lbs, 210-lbs, 240-lbs, 260-lbs, 300-lbs, 330-lbs 365-lbs.

Captains of Crush 60-lbs, 80-lbs, 100-lbs, 140-lbs, 195-lbs, 280-lbs & 365-lbs.

The general rule of thumb is if you can complete 15 repetitions of a set resistance where the ends of the handles actually touch on each repetition, you are ready to progress to the next resistance.

Your handgrippers can also be used to develop or test your static hand grip strength. Squeeze the handles of your grippers until they are nearly together, then place a coin between the ends of the handles and then squeeze the handles together applying pressure to the coin. The objective here is to see how long you can hold the coin before it drops to the ground.



Additional exercises to strengthen the forearms and assist in grip strength

More than $\frac{1}{2}$ of the forearm muscles cross the wrist joint and attach to the fingers and thumbs, this means that more than $\frac{1}{2}$ of the forearm muscles are responsible for finger/thumb flexion and extension in addition to flexion, extension, abduction and adduction of the wrist.

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Wrist flexion/extension

Wrist flexion & extension with a BB

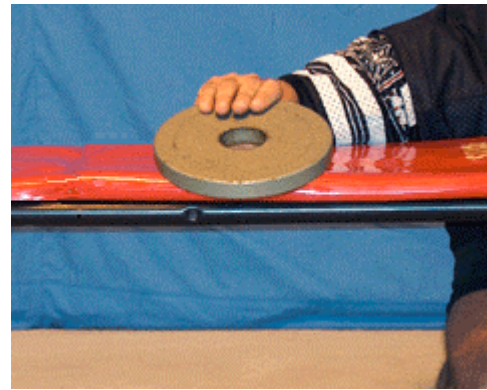
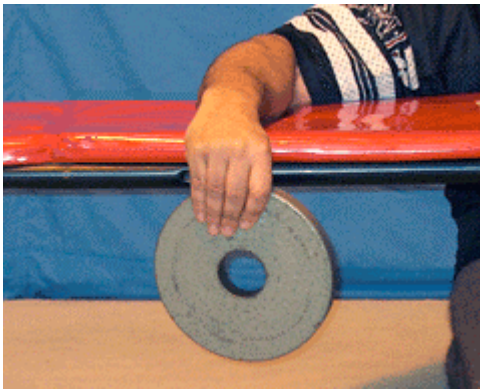


Wrist flexion & extension with a DB



Wrist flexion and extension can also be performed holding a weight disc, utilising your pincer grip.

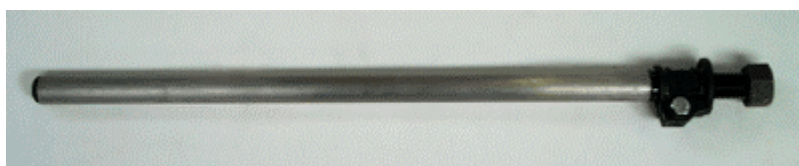
Wrist flexion & extension with a weight disc



You should be looking at a minimum 2:1 ratio of wrist extension to wrist flexion, the majority of exercises that we perform in the gym involve a much greater ratio of wrist flexion to wrist extension (read article "Weight training & tennis elbow"). Over developed wrist flexors and under developed wrist extensors can be a contributing factor to the condition "tennis elbow".

Wrist abduction/adduction

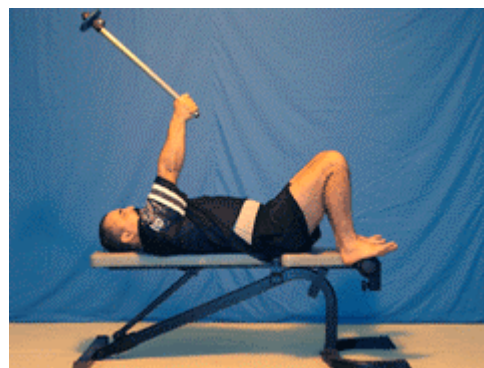
For these exercises I have made up a bar which consists of a piece of steel pipe with a bolt welded on the end. The bar is 25-ml in diameter and 300-ml long, the bolt is 25-ml in diameter and 75-ml long.



Wrist abduction



Wrist adduction



Additional exercises to assist in a grip-strengthening program

Wrist pronation/supination

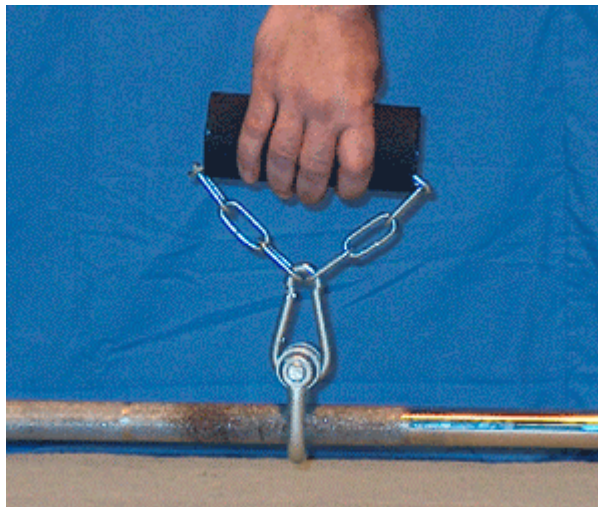
In this exercise we use the same bar that was used in the wrist abduction and wrist adduction.

From a standing position, you keep your upper arm adducted and firmly braced against your body with your lower arm bent at a 90-degree angle, while holding the weighted bar you rotate your forearm, moving your hand back and forth from a prone position to a supine position.



Deadlifts

If deadlifts are part of your exercise programming, you may want to consider the grip you use when performing this exercise. For some reason every one uses a grip with one hand in the prone position and one hand in the supine position, now this is fine if you are lifting near maximal to maximal loads where you are physically unable to lift the weight with both hands in the prone position, however if you are looking at increasing your grip strength you may want to consider performing deadlifts with both hands in the prone position until you get to a weight that you can no longer lift, then switch to one hand prone and one hand supine. You'll find that if your grip strength is improving, the weight that you can lift with both hands in the prone position will increase. Deadlifts can also be performed using the handles we made for our static hand grip strength exercises, the handles are attached to your Olympic bar using a couple of large D shackles and a few washers for spacers.

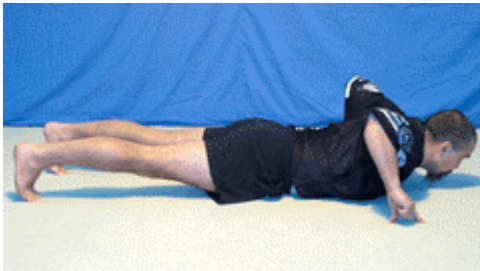


You will also need to make a small lifting platform, the height of which is the same as the distance between the BB and the static handgrip handles, this will ensure a full range of motion when performing deadlifts. Now you can perform deadlifts with a 50-ml grip or a 75-ml grip.



Push-ups on finger tips

Performing push-ups on your fingertips is an excellent way of building up the strength in your fingers. Start off with one thumb and four fingers, as the strength in your fingers builds up you will be able to perform your push-ups with one thumb and three fingers (make sure you rotate the finger that is resting), once you master one thumb and three fingers, try one thumb and two fingers eventually you'll be able to master one thumb and one finger push-ups. Make sure you rotate the fingers that are working and the fingers that are resting so all fingers get an equal workout.



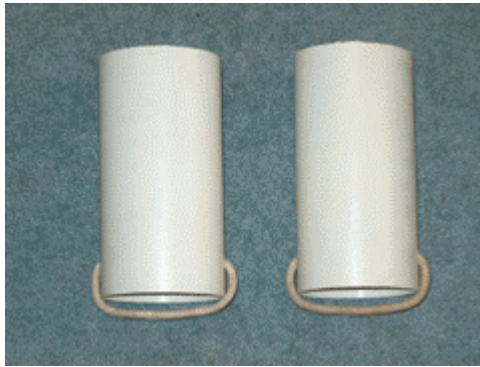
Finger extension

Don't forget to balance your opposing muscle groups, all gripping exercises involve our finger flexors, predominantly "Flexor digitorum superficialis" and "Flexor digitorum profundus" which are also wrist flexors and are therefore trained every time we perform wrist flexion (in addition to gripping objects). Our finger extensors are predominantly "Extensor digitorum" which is also a wrist extensor and is therefore trained every time we perform wrist extension (which as mentioned previously is not very often), there are also four other finger/thumb extensors you need to consider

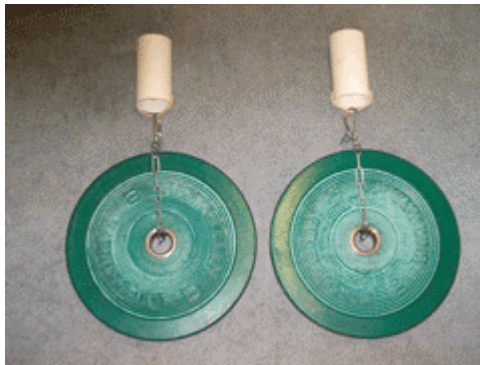
- 1) Extensor indicis - action is extension of the index finger and weak wrist extension.
- 2) Extensor digiti minimi - action is extension of the little finger and weak wrist extension.
- 3) Extensor pollicis brevis - action is extension of the thumb and weak wrist extension.
- 4) Extensor pollicis longus - action is extension of the thumb and extension of the wrist.

These four muscles are only involved minimally when performing wrist extension (unlike Extensor digitorum), which means unless you perform some quality finger extension, these muscles will stay under developed which could lead to problems in the future due to a lack of muscle balance.

To train the finger and thumb extensors I've made some finger extensor grips out of 90-ml PVC pipe for average size hands and 110-ml PVC pipe for large hands, the length of the PVC pipe needs to be around 180-ml long. Your hands should fit snugly into the pipe, when you extend your fingers and thumbs, at least two joints of each finger and thumb should be in contact with the PVC pipe. A hole is drilled 25-ml from the end of the pipe, the diameter of the hole is such that a piece of narrow rope can be threaded through the pipe and tied off.



- 1) The large pieces of chain are threaded through the holes in the centre of the weight discs that you are attempting to lift, the two ends of the chain are connected together with a spring clip
- 2) Your extensor finger grips are then connected to the spring clip that is attached to the weight disc.



- 3) You slide your hands into your finger extensor grips, extend your fingers and thumbs and from a standing position lift the weights off the ground (in a similar action to a deadlift), attempting to either lift the maximal load that your finger extensor strength will allow you to lift or lifting sub-maximal loads and holding for a set length of time.

The skin on the back of the fingers and thumbs is quite smooth (especially the nails) and when in contact with the PVC pipe (which is also smooth in texture), offers very little grip. To help overcome this problem you can wear a pair of rubber gloves for added grip.



Using a 50-ml bar to increase your grip strength

I've read some grip strength articles over the years that recommend the use of a 50-ml barbell which is a bar made out of a piece of steel pipe that is 50-ml in diameter, approximately 2.2 metres long (the same length as a standard olympic bar), at least 3-ml in thickness to minimise bending, with a couple of collars made up and attached to the pipe. The concept of such a bar is great if you are looking at increasing your grip strength however there are a few things that you should consider first.

When using a 50-ml bar for your five push exercises,

- 1) Superior vertical press
- 2) Incline press
- 3) Horizontal press
- 4) Decline press
- 5) Inferior vertical press

your 50-ml bar sits in your cupped hands while your grip strength does little more than stabilising the bar, therefore all the muscle groups involved in your five push exercises are still working maximally (the muscle groups that surround the shoulder and scapula and the muscles that extend the elbow).

When using a 50-ml bar for your five pull exercises,

- 1) Superior vertical pull
- 2) Incline pull
- 3) Horizontal pull
- 4) Decline pull
- 5) Inferior vertical pull

gravity's force is constantly pulling the bar out of your hands, which places a huge emphasis on your grip strength. It is considerably harder to hold a 50-ml bar due to the wider spreading of the hands, the wider the diameter of bar the further you get away from static hand grip strength and the closer you get to pincer grip strength (which is considerably weaker than static handgrip strength). You'll find that when performing your five pull exercises with a 50-ml bar, your grip strength will be working maximally however all other muscle groups involved in the pulling motion (the muscles that surround the shoulder and scapula and the muscles that flex the elbow) will only be working sub-maximally because your grip strength can't hold the same weight that you can lift with a standard 28-ml bar. If you are attempting to put together an effective upper body routine with a 50-ml bar, the muscle groups involved in your 5 push exercises will get a decent work out however the muscle groups involved in your five pull exercises won't as they are only working sub-maximally.

Now you may ask what was the point of using a pair of "D" shackles to connect your static handgrip handles to your deadlifting bar if your hip, trunk and knee extensors are only working sub-maximally? The deadlift is one of the best exercises for truly testing your grip strength, hence the adaptation of one hand prone and one hand supine to lift near maximal to maximal loads, and therefore is a great way to train and/or test your grip strength. If your deadlift training is about how much weight you can lift then of you would use a standard 28-ml bar.

Conclusion

The aim of this article was to highlight “Grip strength training” in a simple, practical and cost-effective manner. Treat your grip strength training the same way you would treat any other part of your training by incorporating it into your regular resistance training programs and/or setting aside separate training sessions specifically for training your grip strength.