

Core "strength" vs "strength endurance" training

Originally published 26 March 2019 · fatchfitness.com



Core Training

This article looks at the typical abdominal training routine (for repetitions to failure) compared to performing advanced stability exercises for fewer repetitions (with good form).

The advanced stability exercises stress the core in a different way to the high rep method – obviously many less reps a high load stress on the target muscles & functionally more specific core stability.

Typically in a gym setting you might see exercise routines that look like this:

Bench Press 3 × 5-8

Seated Row 3 × 5-8

Squat 3 × 5-8

Biceps/Triceps 3 × 8-12

etc, etc.

Core/Crunches **3 × 30!!**

Why is it that we treat the core differently from every other muscle group in our body?

Historically it has been thought that as the core consists of stabilising muscles (predominantly slow twitch fibre muscle types) that the best way of training them is to do higher repetitions (in the strength endurance range) that will somehow condition them to be able to handle the daily demands of core stability.

Biopsied abdominal muscles indicated that all 4 core muscle groups (rectus abdominis, External Oblique, Internal Oblique and Transverse Abdominis) all have similar percentages of slow twitch to fast twitch ratios (approximately 55-58% Slow Twitch & 42-45% Fast Twitch). So there is a high % of fast twitch fibres within these muscles and as such they will respond to more strength oriented training rather than solely strength endurance training.

This outdated view on the core muscle type is similar to a widely held view that a distance runner should perform only strength endurance training in the gym (eg leg press 3 × 30+ reps) in the belief that this somehow prepares the endurance athlete's legs for the 10,000+ steps that will need to be taken during any endurance event!

The same goes for training the core – what we want to achieve with the core is the development of high strength so that the core is capable of resisting fast and high load movements as well as being able to hold a lower level of contraction for a longer period (research has shown that a stronger muscle is capable of contracting sub-maximally for longer periods than a less strong muscle).

As previously outlined ([Abdominal Exercise Progression](#)) – You can't just jump into heavy strength training of the core without the potential of injuring yourself (injuring the core muscles or other supporting muscle groups).

But, once you have worked through a sequence of increasingly more demanding core exercises, you should be looking at adding some lower repetition, high stress demand core exercises into your routine.

How I would recommend you add these exercises to your routine is to slowly replace some of your more endurance oriented core sessions with more strength routines.

Another important reason (IMO) for incorporating these sorts of exercises into your routine is that it has you focus heavily on good technique and contracting the core muscles (particularly the deep TVA and obliques), without this focus on maximal contractions, you will not be able to hold the technique resulting in poor technique and potentially overloading other support muscles (eg hip flexors, etc).

You often see clients going through the motions with their core routines – in particular if they have high repetitions to complete they will start modifying their technique to complete the repetitions even if they are being less effective in the latter stages of each set.

I would recommend you begin with some effective plank variations – Now like all exercises, these can be done well or poorly – A key focus of these following exercises is to NOT ALLOW YOUR HIPS TO MOVE TO ONE SIDE (your body trying to balance itself) when performing the movement. This is where the increased load upon your core comes from, by placing your body in an imbalanced position and requiring your core to hold the body in the required position.

Below is a sequence of plank movements that take you from relatively easy (symmetrical) to highly challenging (if you are able to not move your body at all during the movement) is shown below.



1. Standard Plank

This exercise can be improved upon by not just holding this standard plank position (like shown) but by really focusing on contracting your core as hard as you can ensuring that you are not becoming lax through your core (allowing your hip flexors to increase their role in this movement).

A cue I use with clients is to have them try to perform a crunch movement during the plank position, even though there is no movement taking place (ribs to pelvis). This strongly activates all core muscles and will result in rapid core fatigue.



2. Single Leg Raise Plank

From a solid plank position, try to lift one leg off the ground **BUT DO NOT ALLOW YOUR HIPS TO MOVE TO THE OPPOSITE SIDE.**

You should focus on a very strong core prior to lifting the leg off the ground.

The movement off the ground should be smooth, lifting the leg up (and laterally - more advanced) pausing for a second prior to slowly lowering the leg back to the ground all the while keeping the rest of your your body absolutely still.



3. Alternate Arm/Leg in Elbow Plank.

This movement is easier to perform than the single arm raise plank (No. 5).

The start position is to concentrate on holding your core very strong/solid/still and slowly try to lift both arm and alternate leg off the ground at the same time.

An alternative is to lift your leg first and once stable, lift your opposite arm and hold for a second before returning both limbs to the floor.

There is both a balance and rotational load placed upon the core whilst performing this exercise, so it is great for developing both general strength and proprioceptive strength/balance through this region.



4. Alternate Arm/Leg in Pushup Plank.

This movement is similar to that of the elbow plank variation. Depending upon your arm strength, you might find this exercise more demanding than the elbow version.

As there is less surface area with only your hand on the ground (rather than your entire forearm), you will find the balance component of this exercise more difficult than the elbow version.

I like to have my clients emphasise a long hold at the top of the movement which really challenges the core in a proprioceptive way prior to slowly lowering both arm and leg to the floor and then immediately repeating with the other arm/leg.



5. Single Arm raise in Plank.

This is the most demanding of the plank exercises shown.

As there is considerable weight placed upon the elbows in this position, the rotational stress placed upon the core when trying to lift off a single arm (and not move the core) is considerable.

You might need to reposition your arms to provide a wider base prior to performing this exercise.

Also placing your feet wider apart will also improve your success in this exercise.

Done slowly and correctly requires advanced core strength and stability.

In all the above exercises, particularly Exercises 2-5, if performed correctly, you will only be able to perform a small number of repetitions before exhausting your core. This is one of the goals of these increasingly difficult plank variations, not to spend more and more time in these positions, but to increasingly challenge the entire core complex with difficult rotational loads that condition the core to be able to hold/resist against short term high level forces.

Several exercises that are at a totally next level to the plank exercises are the following:



1. Pushup walkouts

You start in a hips high pushup position and slowly start to walk out with your arms.

This exercise will quickly place the core under a very high load – this must be counteracted by a strong contraction of the core to not allow the hips to collapse or rotate (as the hip flexors increase their activation to assist in keeping the body up).

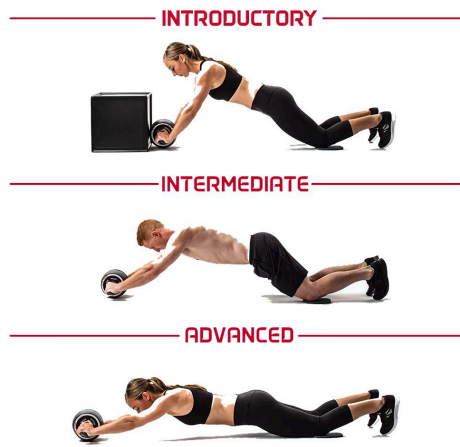


2. Pushup position on swiss ball

There are several more challenging variations of this exercise.

1. Having your hands closer together.
2. Placing more of your weight on your arms (bringing your shoulders over your hands).

Once in this position, if you then start to wobble the ball from side to side, front to back this will place a very high stress load on the core (in particular lower core) and typically this is an exercise that can only be performed for a few seconds prior to fatigue affecting technique.



3. Ab Roller

This exercise should only be undertaken by advanced trainers.

The load placed upon the core/Lower back even in the introductory position is very high.

A person can most likely complete intermediate or even advanced level repetitions but doing so by having a high reliance upon the hip flexors to hold the core in place (which won't be lower back friendly).

I would strongly suggest that the ab roller exercise is left to those who have a very high level of core strength.

Please see a recent Youtube clip I posted on the [ab roller](#) and why it is so advanced.

All these advanced core exercises should be completed with low repetitions with a high focus upon the strongest core contraction you can muster to try to keep the pelvis from rotating due to the increased load placed upon the pelvis/lower back from the hip flexors trying to assist with these movements.

My next article will look at core exercises with increased stability requirements – less demanding than these advanced core strength exercises, but just as difficult in their own way.