

Core Training – Strength@Range 1

Originally published 10 March 2020 · fatchfitness.com



A key Role of the core – controlling extreme movements.

I have covered the key functionality of the core musculature in a previous blog (Core Contractions). In several of my previous "core" articles I have highlighted the following functions:

1. Torso Flexion, Lateral Flexion, Same Side & Opposite Side Rotations.
2. [Isometric contraction through abdominal bracing.](#)
3. Pelvic stability when the hip flexors are being used.

In this article I want to cover the 4th important role of the core, that being:

4. Protecting the spine when an unexpected load is placed upon the torso (both in and out of the anatomical position). This protection occurs in two ways:

- Providing abdominal bracing in an extended or twisted torso position.
- Rapidly increasing intra-abdominal pressure to protect the spine when the torso is subject to a fast loading event (typically in an extended or twisted torso position).

Rarely do I see training for 3. above being done correctly ([outlined in my last blog article](#)) and almost never do I see training for 4. which one could argue is the most important aspect of core functionality.



Let's start with some basic terminology. When I refer to the **"Anatomical Position"** this is how anatomists and kinesiologists reference muscle and joint positions. The Anatomical Position is shown on the right.

What we typically see in any gym setting is all core exercises being performed from a starting anatomical position into a flexed or flexed-rotated position back to neutral.



Standard crunch – flexed torso.



Seated Russian Twists – Flexed and rotated torso.

Firstly I must highlight that there is nothing wrong with the above exercises as long as you have the core strength to do them correctly and minimise pelvic tilt (particularly with Seated Russian Twists with the legs off the ground).

What I am highlighting is that once you have developed your core with these and similar exercises, we should be aiming to add some "[strength @ range](#)" core exercises so that you are able to provide lumbar spine support when not in an anatomical position (or flexed at the torso).

So what are examples of an unexpected load on the torso outside of anatomical position?

These situations happen all the time – in fact just in the past week I have had two gym members tell me of such situations they were placed in resulting in both of them straining their lower back because of an inability to protect the spine in this unfamiliar position.



Example 1. This gym member's young daughter ran up to him from side on and jumped up onto him – he twisted slightly behind himself to catch her and placed himself in an extended and rotated position resulting in his core being unfamiliar with this movement. His core was unable to protect his spine from the load and resulting in him "tweaking" his lower back.

Example 2. This gym member was helping out a friend move a clothes drier that was bolted onto a wall in a small laundry. To ensure the dryer didn't fall to the ground, he had to twist and reach to get his hand under one end of the dryer and when trying to lift it his core had no way of protecting his lower back and he slightly injured his back in the process.

There is more than one issue here;

- firstly, it might be a lack of core strength that led to the injuries,
- it could have been that they their core was strong but not coordinated strong ([Strength vs Strength-Coordination](#)),
- it may have been that they haven't correctly learnt how to switch their core on ([abdominal bracing](#)) and finally,
- they may not have learnt how to place their bodies in the correct biomechanical position to absorb such loads (expected or unexpected).

Like all things training-wise, we have to start at the beginning and ensure that we provide adequate progression to get the core into a state such that it can better deal with such above situations.

I always start clients on the [basic core training exercises](#) and as early on as possible start them on training their core out of range (extended from anatomical position).

I find the safest way of achieving this extended loading (without having to rely on hip flexors and the associated issues with pelvic tilting, etc) is to have the client complete the following exercise:



Extended Swiss Ball Crunches

This is one of my go to exercises for developing the deep core muscles as well as starting to prepare the core for pelvic & lower back stability when out of range (extended from the anatomical position).

The exercise begins with you laying over the Swiss ball and allowing your chest to hang as far over the ball as possible. (This takes a bit of time to feel comfortable in this position as you feel like you might at any second fall onto your head!).

The subject in the accompanying image is using too large a ball, it is easier to drape yourself over a smaller diameter ball.

Once you are in this extended position over the ball, the following steps are taken:

1. You relax your core totally so that you are fully extended over the ball.
2. You then firstly abdominal brace (with a focus on oblique contraction – belly button to the floor).
3. You then try to lift your chest directly to the ceiling/sky (do not try to curl up).
4. Don't pull on your head – your arms are behind your head purely for support.
5. You will only be able to lift your body to about anatomical position.
6. Lower back to your starting position, relax your core, full extension over the ball and repeat 1-5.

This exercise trains your deep core musculature (Transversus Abdominis) and really loads your obliques (both internal and external). At the same time you are now starting to train your core to be able to effectively contract from an extended torso position.



This exercise is very specific to the typical body position you see people get themselves into when trying to lift a heavy object.

I ask my clients to build up to 3 sets of 20-30 repetitions (this takes a long time to do as this exercise is very targeted on your deep core muscles and fatigue happens quite quickly).

Once the client has become proficient at the above exercise, I then make the following modifications:

Extended Twisted Swiss Ball Crunches



The exercise I would like clients to complete is a slight variation to the above Extended Swiss ball crunch – the starting position is the same (Important that the movement begins from an extended torso position), the only difference is that your initial crunch movement is to try to lift one shoulder first. It is a subtle movement, but will rapidly fatigue your obliques and will begin to train your core to control a rotational movement in an extended position.

There are a wide variety of core exercises that can be done in an extended torso position, BUT, most of these do rely on the use of your hip flexors as support and if your abdominal bracing isn't well developed enough, then you end up putting additional stress on your lumbar spine (not only from the extended body position, but also from your hip flexors pulling on your lumbar spine attachments during the exercise).

In my next article, I will cover more advanced core@range exercises (intermediate to advanced) as well as spend some time covering the addition of speed to the movement (which ultimately is what the core needs to be very good at combating – a load that happens quickly and having your core able to counter this load at velocity in protecting the spine).

SUMMARY:

- 99% of all our core training is from the anatomical position into flexion/rotation.
- Many of our lower back injuries come from being exposed to a load in an extended/rotated torso position.
- A safe way of beginning to train your core to cope with load at range is the use of Extended Swiss ball crunches.
- As your core conditioning improves, there are a range of more advanced exercises to better prepare your torso for the real world demands placed upon it.