

Core Strength vs Strength Coordination

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This article is based on my observations using the Abdominal Biofeedback device with the testing of dozens of clients at my local gym.

Due to the easy access to Youtube & Instagram fitness influencers and their often misinformed advice on how to get a great 6-pack, I see gym goers completing core exercises that are far too advanced for their core to support their pelvis/lower back. This results in them overloading their lower back (which as a young person you can get away with for a while), there is continued micro-trauma taking place which will catch up to these individuals later in life with the potential for ongoing lower back pain and restriction of movement.



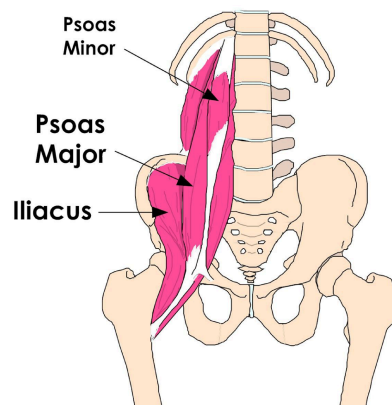
The No. 1 advanced core exercise I see clients performing (incorrectly in 100% of the cases) is the infamous leg lowers.

This exercise is one of the hardest movements you can place upon your core.

Unfortunately even unconditioned clients can do this exercise – what they don't realise is that they are doing it incorrectly resulting in a large amount of stress being placed upon their lower back where their hip flexor muscles are attached.

The question I am often asked, is;

“WHY DO YOU SAY THIS EXERCISE IS SO ADVANCED IF I CAN DO IT EASILY?”



The answer to this has to do with what the role of the core musculature is when performing this movement. The joint movement taking place during this exercise is hip extension/flexion. What controls this movement are the hip flexor muscles. These muscles consist of the Iliacus, Psoas Major and Psoas minor.

These muscles attach to the femur (lesser trochanter) and run through the pelvic region attaching to the top of the pelvis and the lumbar vertebra.

The role of the hip flexors is just that, flex the hip, which we do every single time we take a step (walking or running). These muscles become very strong & can get tight (another issue related to pelvic tilt).

During the leg lowering exercise, the hip flexors are the muscles that are controlling the rate of lowering or raising of your legs. As your legs have a certain weight and as you lower them the torque placed upon this region increases (distance x force/weight) then the hip flexors pull harder on their origin (Upper pelvis/lumbar spine) to try to keep the leg movement controlled (and to stop the legs falling to the ground).



This image shows the subject with an arched lower back (top) and the correct technique (bottom)

The role of the core musculature during this movement is to ensure that the hip flexors do not actually pull on the spine with such force that the pelvis/lower spine starts to move towards the legs (known as anterior pelvic tilt).

These forces can become very high and many years ago I was working in a gym where a client doing an incline situp (again a major hip flexor exercise) actually tore a part of his psoas muscle from his lumbar spine!!! The pain was so intense that we needed to call an ambulance to take him to hospital for treatment.



The role of the abdominal biofeedback device is to measure how well you are able to contract your core during varied leg lowering exercises and keep your pelvis/lumbar spine from moving.

As you lower your legs, if your core is unable to stop the anterior tilt, then the pressure on the feedback bladder will reduce (indicated by the pressure gauge) meaning that your core is unable to counter the torque being generated by your leg movement (putting significant pressure on your lower back).

As I mentioned earlier in this piece, I have yet to test a client (whom was performing double leg lowers) who has had the core strength/control to negate an anterior pelvic tilt when asked to "SLOWLY" lower their legs (let alone have them lower their legs with speed as most clients do when performing this exercise).

MY OBSERVATIONS FROM THIS TESTING:

From the numerous tests I have completed I have come to the following conclusions:

There are two types of clients when testing them with the abdominal biofeedback unit.

1. The client just lacks the core strength to maintain any neutral pelvic tilt and so they are poor at this test.
2. The client has trained their core a lot (even if incorrectly) so they have developed quite strong core musculature, but they have not developed the appropriate motor patterns to control their pelvis whilst performing these hip flexion activities (again resulting in anterior pelvic tilting).



In both cases they perform quite badly on the test (in fact, there are few clients I have tested that have been able to get a single leg extended without struggling to keep their pelvis neutral). So you can imagine the stress being placed on their lower backs when performing dynamic double leg lowers!!!

NEXT STEPS!

At the end of this testing I typically suggest the following to clients:

1. Immediately stop performing double leg lowers (also no ab roller or situps with feet being supported).
2. I teach the client how to use their hand under their lower back (rather than the abdominal unit) so that they can perform these slow controlled single leg lowers and be able to measure how well they are maintaining a neutral pelvis.
3. I have them perform the above leg lower exercise as regularly as they can (we are trying to develop the motor patterns as quickly as possible) and I add two additional exercises that are very useful for appropriate core development:



Dynamic Plank - Contract abs to try to draw elbows to knees.

a. Plank with an active core contraction (typically planks are complete passively resulting in a large hip flexion component and again anterior pelvic tilting).



b. Swiss ball crunches from an extended position – this really activates the deep core musculature (and also trains the core in a way that is very functional – I will expand on this in a future blog post).

SUMMARY:

1. Supine Leg Lowers is one of the most advanced core exercises you can undertake.
2. Most clients do not have the core control to effectively complete this exercise.
3. This lack of core control can lead to micro-trauma of the lower spine which will accumulate over time.
4. There are many very effective core exercises you can use to develop the appropriate core control prior to completing double leg lowers.