

Ab Fab Part 2 (abdominal strengthening & core control) – Let's Get Practical

By James Bone

For background refer to Oct 2009 article – Ab Fab Part 1.
Let's get practical now about our abs and core control.

Principles of practice:

- Keep it simple.
- Breathing naturally is part of good core work – poor breathing can severely affect core work - master good breathing techniques FIRST
- It all begins with good posture – natural neutral spine curves.
- There is nothing magical about abs & core – research suggests, but is quite controversial, about how helpful core training can be. It may help, but it suddenly won't make you a faster runner or better sports person. It may not even help prevent injuries, unless you have a core problem going on in the first place - it is just part of an overall program for posture and health. Even the research about how to do core work is conflicting!!!
- Give VARIETY to core practices so as not to create over use issues or imbalances from concentrating on one area too much.
- Be careful not to over do one component of abs and core work, as you may cause an imbalance to your posture or how your muscles work – avoid over working the outer core muscles, if the inner are not working.
- Remember there are inner local core muscles and outer global core muscles – both are important.
- It would seem prudent to get local inner core muscles working properly, before you do excessive outer global core work.
- If you have had an injury, back pain, pelvic pain, or problem, you should see a physio to check that your deep core muscles (and possibly outer core muscles) are working properly.
- Once Local core work is mastered, a program should include global holistic movements, which integrate core and abs – in other words a holistic yoga program or other exercise program is best
- The goal is natural graceful fearless movement.
- For good posture, the goal of Core and ab work is more about endurance than strength – muscles need to be able to work for long periods rather than with forceful strength – holding with lower contraction force for longer times.
- Follow the principles of antigravity muscle control – lift tall, yes nod,

thin waist, pelvic floor up, lift pelvic bones from the hips, inner thighs up and back, arches up, feet grounded.

- Walk tall, push from behind rather than stride out to the front.
- Check for yourself – we are all different; what is good for one person, may not be for another. We have different needs and issues.
- Don't forget the mind and feelings – with correct core work you generally feel more grounded, stable, and feel more in control – the basis to begin to explore deeper into yourself.
- Always remember yoga's first rule – AHIMSA – do no harm first.
- I find in society there are two characteristic patterns of people toward activity – those who are sedentary and take motivation to act, and those who are manic and do their activity to the extreme – even if harmful. I believe the goal is to know who we are and work towards a point of balance!!!

CARE – See your doctor or health practitioner first to see that an exercise is appropriate for your self if you have a medical problem, injury or are pregnant. See your personal trainer, physio, exercise physiologist, yoga teacher or other exercise specialist for guidance on how to do the practices correctly for your self. It is difficult to learn to do exercises properly from reading; it is best to learn in a practical experiential way.

There are many exercises, which can be used to strengthen the core – some controversial.

Research tends to indicate some are better than others. I am going to briefly describe these practices and also give a few ideas within yoga, but remember to do them properly you need to seek hands on guidance.

How to activate the local inner core muscles:

- Research has shown that the simplest and easiest way to isolate the action of the deep Transversus Abdominis muscles is the abdominal hollowing or “drawing in” action. This is done with a neutral spine without pelvic tilt – pelvic tilting leads to increased activation of the front and side abdominal muscles: Rectus Abdominis and Outer Obliques.

Try this - Place your hands at the level of the pelvic bones on the soft belly. Gently draw in or hollow your lower belly and feel the muscle under your fingers firm, but not push out, while keeping the side waist muscles more soft.

YOGA - From a Yoga perspective, the drawing in of Transversus Abdominis would relate to a Gentle or Level 1 version of the Upward

Fly Lock or Uddiyana Bandha. It would also probably include a little activation of the Multifidus muscle described below.

- Multifidus is the deep spinal muscle, which provides stability to the spinal segments located next to spinal bones on either side. There is no simple practice to activate this muscle. One possible way is to lie on your side with a pillow between your knees, and spine aligned in neutral. Imagine lengthening the spine – tail towards your feet, and stretch upward to the head. Can you feel the muscle deep and next to the spine firm?

One simple test if the above muscles are working is have someone rock your hips gently in side-lying with core muscles relaxed, and then activated – they should find the pelvis doesn't rock as much when the core muscles are activated.

- Research indicates that the pelvic floor muscles activate best when the spine is in neutral curve. Good posture alone can help these muscles work.

Try this - Sit on a small hand towel rolled up and positioned as though you are sitting on a saddle. Rock your pelvic bones backwards and you will feel pressure toward your tailbone. Now rock forwards and you will feel pressure toward the front pelvis. Come to the point between, sitting evenly on your sit bones. Now gently lift your pelvic floor muscles upward from the towel roll.

YOGA – The Pelvic Floor lift relates to the Pelvic Lock or Mula Bandha. *Remembering that in Yoga, the locks/Bandhas are also performed to affect not just physical, but also energetic and deeper levels of our being.*

- As indicated in the previous article the antigravity action of lifting tall through the crown of the head, can also bring these muscles into action. Be careful of lifting tall if you have any acute neck problems involving the nerves, and also AVOID extending the spine ie poking the chin or arching the back. It is a subtle action lengthening not extending the spine.

YOGA – Lifting tall with the crown and keeping the chin nodded inward would also relate to a gentle or Level 1 version of the neck lock or Jalandhara Bandha.

These actions can be incorporated into simple movements, which challenge the stability of the pelvis, such as lying on your back and

raising and lowering one lower limb, or leg (or arm raising) raising from the Cat position (Hands & Knees).

A simple and effective practice!

YOGA – Lying with arms overhead and raising one leg to 30, 60 and 90 degrees and lowering in reverse, or Griffin practice (on hands and knees). If straight leg is too difficult begin with the knee bent.

The goal is to keep the inner muscles gently active to control any rotation or movement in the pelvis or spine, as you do the lower limb actions. There is quite a bit of good research to show that this simple single leg raise action, can be very helpful to improving trunk stability and core function.

Outer Core Muscle Control

There are many outer core exercises, and to describe them all is way beyond this article, but just to give some research tips on what tends to work best for specific muscles: Most research studies for this area are based upon muscle activity recorded via EMG (Electromyography), which tests for the amount of muscle activity. It is not a test of over all control.

CARE Please take CARE with doing excessive core work, which over flexes (or twists) the spine, especially doing multiple repetitions. Sit Ups may work abdominal muscles, but probably place too much stress on the spine with excessive or long term practice. Small curl ups are better, but again multiple reps may still be spinal loading. Holding a small curl up isometrically (without movement), may be a better way to improve core endurance with less spinal force, but be wary that isometric patterns increase blood pressure. In fact any action which causes you to brace the trunk strongly, can increase spinal compressive loads.

So it all comes back to common sense – don't over do anything – more is not always better. Variety of movement, variety of core movements, time for rest, and counter moves to relieve spinal compression, are all important – all these things normally form part of a well grounded holistic yoga practice.

The BEST exercises to activate the RECTUS Abdominis (RA) muscle (Front sit up muscles or trunk flexor muscles) may include:

- The Bicycle Action – opposite elbow to knee with crunch
- Roman Chair – Arms supporting weight on bar and then bringing knees to chest
- Curl Up over Swiss ball

YOGA - A curl up with both legs extended in the air, the Boat (called V Sit in literature), and Prone Plank, have all been measured to activate RA well.

However to do these exercises safely and with control, one needs to build up to them, and be sure that your local inner core is working properly ie master inner core control and basic curl up actions first.

The best exercises to work the side waist muscles or the obliques (the waist rotator muscles) may include:

- Roman Chair
- Bicycle Action
- Reverse Crunch

These are strong actions and are for people to work towards (and also not to over do).

YOGA - Side Plank (Vasisthasana), Boat, Curl with both legs extended upward, and Front Plank may also work the obliques.

CARE - Double Leg Raise practice – though this practice does activate abdominal muscles, it requires great stability and control to perform properly and should only be done with people with good control and strength. There is some concern in the literature, that this practice may create disc strain and wear and tear, so it should never be used on a regular basis. There are better core practices.

Research has found for the outer back muscles the BEST strengthening exercises are the Dead Lift and Squat performed with resistance.

YOGA - Prone back exercises such as Bridging, Full Locust or Snake (laying the pelvis over a pillow and raising head and chest upward and sustaining the hold ie prone extension) are more effective for improving back muscle endurance, than back strength.

From a **YOGA** perspective there may be other ways to improve core and abdominal strength. One interesting study found that an intense yogic breathing exercise could actually activate the outer core abdominal muscles Rectus Abdominis and the Obliques greater than doing curl ups. The study unfortunately didn't test for the deeper Transversus Abdominis activity. In this breathing practice participants "slowly exhaled through the mouth and then rapidly inhaled through the nose to fully expand the lungs. Next the air was exhaled through

the mouth rapidly using the abdominal muscles as much as possible. With the air exhaled, the mouth is kept closed and a maximum contraction was accomplished with the abdominal muscles against a closed glottis. This last position was held for an average of 6 seconds.” Just think - one can do core work just sitting in a chair and breathing – but this is intense breathing – so some CARE would be needed – avoiding this if a person has medical problems such as high blood pressure, heart problems, eye pressure problems, etc or is pregnant.

TIP - Please note that breathing itself alters core activation and poor breathing practice can lead to poor core activation in general or within exercise or a practice – so correct breathing should be taught and mastered first.

There is not a lot of research about the effects of many **YOGA** practices on core such as:

- Full Uddiyana Bandha or Nauli
- Upward Facing Dog to Downward Facing Dog
- The standing practices - Hero (Virabhadrasana), Side bends etc or balances including Tree, Dancer, Eagle
- Arm balance practices like the Crow, Scales or Pendulum
- Inversions like Shoulder stand, Head stand, Hand stand

Intuitively they obviously have some core effects, but future research may tell us more.

BUT don't forget about balance work aiding core reflex control; and holistic movement which uses your core such as dancing – belly, African, Bollywood, etc. Not much research about this yet, but possibly something for the future. Early research suggests that in functional activities no muscle group works maximally, but rather synergistically – so the best core training is performed in functional movement patterns like walking, balancing, squatting, getting out of chair, or doing one's specific sport or hobby activity – **but with awareness and control.**

Physios these days work with many varied and interesting ways to increase stability in functional ways.

YOGA - Consider the whole body/mind attention needed to perform a practice like Tittibhasana – the Firefly Lift – balancing on your arms with the lower limbs over the upper arms and extended straight out.

I often believe it is not what you do, but is more about your intention and how you do something – if you have the intention to work the

core, then any practice can bring some element of core into play – creating length to your posture and control to what you do.....

Lead every day with some **YOGA** core awareness – Am I remaining conscious or am I totally on auto pilot? Am I in tune with myself, my movement, my feelings, deeper self? Am I breathing consciously? Am I lifting tall? Is my waist thinning? Am I using the strong thigh muscles to stand up? Am I using my arms correctly to take load? Am I moving gracefully and with control? How enjoyable!

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