

## Effective abdominal strengthening - The Perfect Abdominal Curl™ (PAC), the Offering™ and The Menezes® Position

When performing an abdominal curl/crunch do you or your clients ever feel as if your abdominals are 'straining' and that your back is also 'working' or feels uncomfortable? Do you feel your abdominals bunch up rather than flatten? And even if you have your hands behind your head, do you still feel your neck straining – or all of the above? Well most of this is probably happening most of the time!

The abdominal crunch is the (non-assisted) abdominal exercise most favoured by personal trainers and the general public to strengthen the abdominals. The manner in which this is performed has several variations as to what constitutes the most effective way to perform this relatively simple movement.

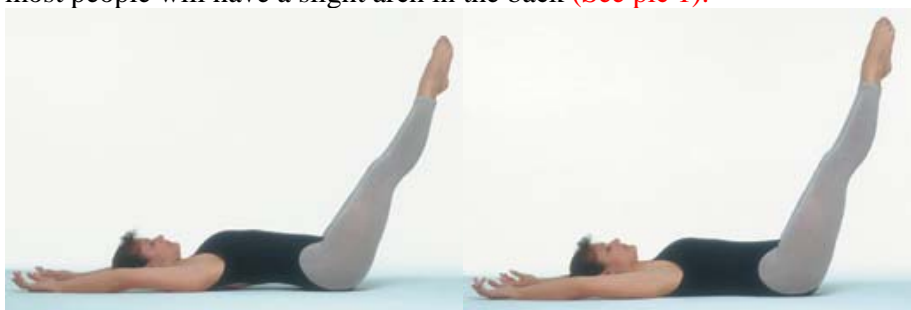
The most common features among all of them when performing the movement are:

- 1 fingers behind the ears or on the temples
- 2 eyes to the ceiling
- 3 initiating the movement by lifting the head and shoulders
- 4 lifting the torso too high (almost into a sit-up, not a crunch)
- 5 having the feet too close to the bottom or raised in the air
- 6 using momentum to perform the movement
- 7 releasing the movement too far back so the head almost touches the ground
- 8 holding the breath.

Although the repetitions *feel* as if they are working (because the abdominals sometimes hurt at the end of the set) they may actually be doing far less work than you think!

The starting position, or supine placement, is where the single most common mistake occurs. It is from here that the back, neck **and** abdominals may strain, rather than work efficiently. The number one reason why people cease this exercise is because of neck strain. In order to overcome this we have devised the Offering™.

When you lie down on the ground and bend the knees or raise the legs into the air, most people will have a slight arch in the back (See pic 1).



Pic 1

Pic 2

This arch in the back is what some refer to as neutral spine. (This is incorrect as true neutral spine occurs in the anatomically neutral position – when the torso and lower limbs are in 180°.) If you raised your legs into the air this lower lumbar section would flatten out, eliminating the arched spine. If you attempt to maintain ‘neutral spine’ with the legs vertical you have a great chance of straining the lower back muscles. This flattening of the lumbar area would also occur when you lift the head and shoulder blades off the ground. [See Pic 2](#). However, has the ‘arch’ really disappeared?

As the hips and shoulders do not slide away from each other when contracting the abdominals on the curl forward or when raising the legs into the air, the once apparent arch has now been pressed *into* the floor. The resultant position is a horizontal compaction of the vertebrae and the intervertebral discs because of the downward (towards the hips) abdominal pressure.

The forward contraction feels like a great deal of work on the abdominals which it is, as this movement contracts the psoas and presses the abdomen upwards. The rectus abdominis and transversus then have to do all the hard work to try to keep the psoas down. If the abdominals are not strong enough this then pushes the belly upwards and not flat. The focus of the work here is not in working the abdominals for strength, but in maintaining pressure on the psoas to keep the back flat! Pressing the heels into the floor also activates the psoas more.(1)

Because the aim is to gain as much ‘work’ from the abdominals and to flatten them as much as possible, more undue strain is placed on the neck to raise the head higher (usually by pulling with the hands, squashing the chin onto the chest and restricting the airways).

Research carried out on first time attendees (from various backgrounds, including gym attendees) to the Body Control Pilates Studios in Sydney revealed that over 90% experienced mild to ‘highly noticeable’ levels of lower back muscle activation during a normal stomach crunch. The initial placement of the torso (i.e. positioning of the lower back on the floor) is the major cause of this discomfort.

Prior to commencing any supine torso contractions, with the legs bent or raised in the air, the spine needs to be placed in an appropriate position that will not adversely affect the performance of the exercise or diminish the efficiency of the abdominal work. This new spinal position is called **Stable Spine™** and the manner in which it is performed is called the Offering™ (adapted from an exercise on the Reformer of the same name)

## **Stable Spine™**

When lying down with the knees bent we need to eliminate as much as possible the arch in the lower back so that the vertebrae and discs do not press together when contracting forward.

In order to feel the benefits of Stable Spine™ you need to do a comparison first. Assume the normal position for an abdominal crunch and contract forward. The

shoulder blades should be off the ground and the ribs should not rise higher than the horizontal level of the ASISs (or the psoas will engage to raise the torso).

- 1 Gauge the amount of *connection* in the abdominals on a scale of 1 to 10 (1 = minimal, 10 = struggling)
- 2 'Feel' the level of strain/effort there is on the neck
- 3 Feel the level of lower back activation

### **The two coin principle.**

Now change the spinal placement by imagining a coin directly behind the vertebrae at navel level around L1/L2 (the lumbar coin) and another in the centre of the sacrum (the sacral coin). Once in the supine position (knees bent) curl the pelvis up into the air. Place one hand under each buttock and press the buttocks towards the heels (Offer your Buttocks to your heels! Hence the Offering™) as you imprint the spine and pelvis back down onto the floor, removing the hands. The lumbar and sacral coins should now be in contact with the floor (do not squeeze the buttocks). The sensation is that of lengthening or decompressing the spine. (In cases of hyperlordosis or greatly contracted gluteals a lumbar arch will still remain.) If you did not feel the lengthening in the lower back, a partner may be able to do this to you with a gentle lengthening of the hips away from the ribs.

If the sacral coin is lifted then lumbar pressing will occur and Stable Spine™ is compromised. This will often occur when the feet are pressing into the floor to perform the crunches.

Now contract the torso once again, but this time drawing the ribs towards the hips to raise the head and shoulders, and compare the difference in 'connection' of the three areas mentioned above; the abdominals, the neck and the lower back. There should be a positive difference with a deeper connection of the abdominals and even an increased contraction; there will be less neck strain and a greatly reduced sensation in the lower back if any at all! Keep the eyes on the knees so there is a continuum of the thoracic and cervical vertebrae.

When releasing the contraction only release back to where the shoulder blades almost touch the floor before repeating the repetition.

### **The Menezes Position™**

It is accepted that in order to alleviate lower back pain you must have strong abdominals to support the lower back – we are told the stomach is the second spine. How true. However, it is not only the abdominals that need to be attended to in order to alleviate lower back pain. Another area of great influence in relation to strain in the lower back are the trunk and leg flexors, namely the psoas and the quadriceps. These two areas need to be 'released' in order to effectively work the abdominals without affecting the lower back.

If the quadriceps are overly tight they will anteriorly pull on the pelvis leading to a greater lordosis of the lumbar spine – they will also exaggerate the neutral spine position when lying down. Effective quadriceps stretches(2) will create more freedom of movement of the pelvis allowing the lower back to ‘open’ and the abdominals to gain a better connection. It has also been proven that the more bent the knees the more the quadriceps work, therefore the less the abs work.

The psoas, until now, has always been the one muscle that has been difficult to avoid when working the abdominals. The psoas attaches from the ventral surfaces of the transvers processes of all lumbar vertebrae, sides of bodies and corresponding intervertebral discs of the last thoracic and all lumbar vertebrae to the lesser trochanter of the femur(3). When performing the abdominal crunch the legs are normally placed in a parallel position to each other. The closer the heels to the backside, the greater the psoas activation and increased anterior pelvic tilt when pressure is placed by the heels on the floor.

We have now been able to find a way to diminish the ‘pull’ of the psoas on the spine so a more effective abdominal contraction can be achieved and there is virtually no strain on the lower back.

- First perform the quadriceps stretches then go into the Stable Spine™ position.
- Interlock the fingers behind the head (for head support only) with the elbows wide open at all times, and the chin just off the chest – keep a soft peach under the chin.
- Contract the torso forward by drawing the ribs towards the hips so the lower aspect of the scapula just come off the floor
- Slide the heels away as far as possible where you feel then lumbar coil just about to lift
- Open the feet wider than shoulder distance and dorsiflex the feet
- Drop the knees inward to each other so they are touching – this not only keeps the sacrum down but also relaxes the gluteus maximus (pic3)
- Complete ten repetitions



By internally rotating the femurs we are lowering the angle of the lesser trochanter and therefore lengthening the psoas to a *flatter* position. This allows the rectus abdominis to contract without bunching up, but more importantly, minimizes the strain on the lower back to an imperceptible level.

One client had been performing standard crunches for years and continuously felt a strain in the lower back. He then attempted the Menezes Technique™ as described above and reported significantly less strain on his back and a greater connection of the abdominals, even bringing him further forward than he was able to previously.

To date, **all** clients who have tried this Technique have reported similar experiences and are able to perform abdominal curls, with correct breathing, more efficiently and effectively than ever before. Further research is being undertaken to clinically verify the effects of this Technique. You may never do an abdominal crunch the same way again!

*Allan Menezes is the pioneer of the Pilates Method in Australia, founder of the Pilates Institute of Australasia and is also the author of "The Complete Guide to the Pilates Method" (PIA, 1998, 2004). He is a USA Certified Teacher Trainer and conducts training courses throughout Australia and New Zealand.*

#### References:

1. Juker, D., McGill, S., Kropf, P., & Steffen, T. (1998) Quantitative intramuscular myoelectric activity of lumbar portions of psoas and the abdominal wall during a wide variety of tasks. Medicine and Science in Sports and Exercise, **30**, 301-310
2. Menezes, A. "The Complete Guide to the Pilates Method" (1998) p80 Hip Flexor Stretch III.
3. Kendall, F.P. Muscles – Testing and Function (1983) p. 214