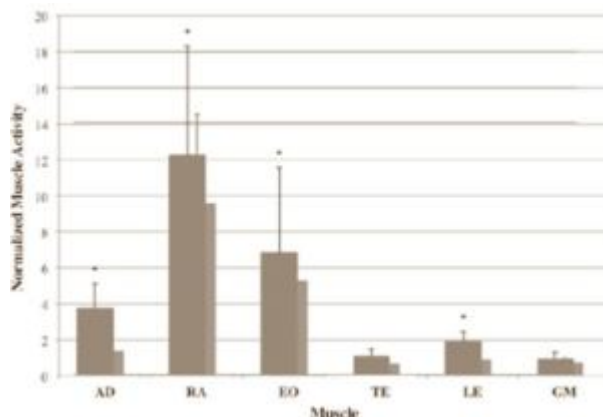


Core – Review of the Literature

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In today's article I wanted to highlight some recent research that helps us focus on what is correct with core (abdominal) training concepts and what we can ignore. I am a firm believer that we should look to perform much of our core training (training in general) within an unstable environment. Reasoning is that whilst we may not be able to lift as much weight as when we are locked down tight on a bench or within a weights machine, we are training a more "Functional Strength" which ultimately is more important for the vast majority of gym goers. This instability is relevant to core training as more advanced exercises I prescribe include performing core activities on a basketball or Swiss ball – this recent paper reinforces this approach.

Exercises performed on a foam roller elicit core greater abdominal muscle thickness than



those performed on a Pilates table. Unilateral leg exercises in a supine position elicit more contralateral muscle thickness than those with bilateral leg support (Muscle thickness is an indication of level of contraction).

Conclusions: *These results provide information to support choices in exercise progression from flat stable to more unstable surfaces and from those with bilateral foot support to unilateral foot support.*

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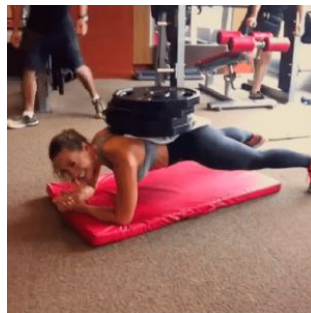
I have discussed in detail the role of abdominal bracing in an earlier blog ([Core bracing](#)) and this



paper highlights that just teaching abdominal bracing without any additional strength training leads to significant improvements in both trunk and hip flexion/extension movements as well as maximal lifting power from a sitting position.

Other important positive changes were that of increased abdominal muscle thickness (Internal Obliques) by 22% and more importantly an increase in the subject's ability to generate Intra-abdominal Pressure (IAP) by a large 58.8%! One's ability to generate high IAPs during any exertive exercise is absolutely key to the support of your lower back as well as the capacity to effectively generate maximal strength/power through summation of forces without the core absorbing much of the generated force.

===== This paper reinforced my nagging belief that watching clients in the gym adding lar



ge weights to their backs whilst performing the standard plank wasn't achieving what they hoped. *The purpose of this study was to investigate whether the use of additional external resistance is beneficial for abdominal muscle recruitment during the bridge (planking) exercise. Weights were bodyweight, 10kg & 20kg. **Results:** No significant difference in TrA (Transverse Abdominis) and RA (rectus Abdominis) thickness when exercising with and without external resistance was observed. Whilst external loading provided some extra level of difficulty, it was not beneficial for abdominal muscle recruitment, when performing a supine bridge exercise.* I surmise from this result that the increased muscle activation was targeted at the hip flexors as a major contributor to planking and other advanced core exercises. Moral of this story is that you don't need to hold plank positions for minutes on end or add weight – just [modify the movement](#) to fully engage your core.

===== For those older fitness enthusiasts, loss of balance is a continued concern and challenge as we age.



I provide a range of [core/balance combination exercises](#) to try to build both of these every dwindling attributes and this study indicated that specific core training lead to significant gains in dynamic balance.

===== As someone with a history of lower back issues (when I was younger), I was a firm believer even



back then that the stronger I got my core, the less issues I would have with my lower back. It was this once debilitating lower back issue that started me down the path of attaining a high level of core strength. Without coincidence, the stronger I got my core, the less lower back problems I was having, until I developed a level of core strength that has resulted in no back issues for many years. This recent paper highlights that young football players with lower back pain had significantly less external oblique muscle thickness than those colleagues who were pain free. This lower back pain was also exacerbated by poor hamstring flexibility that would have led to poor pelvic positioning and increased load on the lumbar spine.

===== The final paper reviewed was that of performing pushups with feet in



a sling (eg TRX bands) . The results showed that the subjects not only improved their upper body strength but significantly improved oblique (both internal and external) size. . This result makes sense when you think that the core is mainly involved in keeping the subject



stable whilst trying to perform this type of pushup activity. You could just as easily apply the same techniques using a ball (medicine, soccer, Swiss) and perform pushup or similar activity with the core (most importantly the obliques) firing strongly to try to maintain your stability during the movement.

===== When reviewing a very good paper on the importance of core strength for truly functional fitness – this paper provided a great statement that should form the basis of all training methodologies:

The body's muscle activation pattern is "Proximal Stability" for "Distal Mobility".

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