

A Scientific Response to the Article: The Core Stability Myth.

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I am writing in response to the published article in the Times newspaper yesterday, Tuesday, August 10th, entitled 'The core stability myth', written by journalist Peta Bee. This article is a continuation from the 'myth of core stability' paper published by osteopath Mr. Eyal Lederman

This was a fascinating and thought provoking article that puts forward the idea that all exercise related to core stability, including, and specifically that of Pilates, is a myth. In fact the article goes further to state not only is Pilates not helpful for people with back pain, but can indeed make people with back pain worse. I feel it is necessary to respond to this article as it is very misguided, in my opinion dangerous, and sadly in parts completely factually void!

I would like to analyse the article with you over the course of this correspondence.

The idea that this article may be misinformed begins on the very front paragraph. Peta states that few gym workouts "*are conducted without the cues to engage your 'core' by pulling in the belly button and sucking in the stomach*". As you will all know the two exact cues that we have been advocating for years are completely incorrect. Pulling in the belly button will cause the upper abdominals to activate rather than the lower abdominals, the exact incorrect patterning that Urquhart, et.al, (2005) showed with their highly regarded, empirical research, published in the Journal of Manual Therapy is not optimal in back pain sufferers. Urquhart showed that the upper and lower abdominals have different functional patterning, and that it is the lower abdominals that are affected by back pain. Sadly this vital bit of research has been ignored. Secondly, the cue to 'suck in the stomach' once again has not been used for years in anyone truly managing back pain, once again missing the relevance of Hodges et.al 1996) that showed the link between the activity of the diaphragm and Transversus Abdominis (Tr.A).

Peta has, in her defence, referenced Hodges early research of 1996, 1997 and 1998 in relation to the timing of activity between healthy and non-healthy backs in his ground breaking early research. Sadly, this concept has moved on, it is now 14 years since this publication and Hodges (2008) more up to date research, acknowledges that Tr.A alone is not enough for rehabilitating the spine after injury, but that it is still a vital component of re-training correct spinal mechanics after back pain. A concept we have been teaching for over 9 years now. Indeed, Hodges has now been able to map the cortical response of Transversus Abdominis and its actual change in the motor cortex that occurs after back pain, this motor cortex change is specific to the Transversus Abdominis.

Peta then moves on to proclaim that this research, the 14 year old research, was adapted by gyms to prevent back pain, along with a washboard stomach. An interesting link, as a washboard stomach has a lot more to do with rectus abdominis, a muscle that has absolutely no attachment to the spine itself, and what Hodges and many fellow researches, acknowledges has no link to the occurrence of or the prevention of back pain.

A large part of the article then discusses Stuart McGill's article that this notion of Transversus Abdominis activity actually reduces the spinal support by bringing the muscles closer in to the spine. Now Stuart has some relevance in his article, but the misguided concept that this is relevant to all components of core stability is widely acknowledged. Stuart proposes that bracing the abdominals is a more complete strategy to achieving support for the lumbar spine. In doing this movement one increases the intra-abdominal pressure and braces the spine. Now, this can be appropriate in one of two ways, either with high load tasks or with unpredictable movements such as falling off the sidewalk. This bracing movement is however an automatic reaction to that perturbation.

As a training tool it is rather misguided. If I was planning to lift 100 kg from a standing position, I would agree with Stuart. However, if I am sitting at a desk, bracing of the abdominals is not relevant to functional task. In deed, the way we activate, and therefore the way we train the abdominals is load dependant. The training should be specific for the functional task. As we know, the 'bracing' concept makes muscles work at close to, or at, their maximal capacity (MVC). In this instance muscle fatigue will set in and therefore leave the spine even more vulnerable. In fact, if we looked at this scientifically, we know that the stabilising muscles of the spine, Transversus Abdominis, multifidus, pelvic floor and the diaphragm, are actually predominately type 1 (endurance) fibres, not type 2 (fast acting) fibres. This concept would actually only recruit the type 2 fibres, and these are fatigable. We know that APPI advocates a sub-maximal lower abdominal recruitment initially, and then when load is added, the other abdominals are activated in their normal load bearing capacity, a task they are specifically designed for.

The article then moves on to report that physiotherapists have seen a growing number of people who have back problems as a result of poor pilates technique. *"They tighten their lower backs, stop breathing, or drop their pelvic floor muscles when attempting to 'engage the core'. All of which can potentially make the back pain worse"*. This is reported by Pete Gladwell, a pain specialist with Bristol NHS, and a well known advocate against the growth of core stability exercises. I highly value Pete's opinion, and agree with much of what he has said. However, we all know that what Pete has described is not Pilates at all. Pete has effectively described exactly what Stuart McGill proposes, therefore leading to a large contradiction in this article. Pete has actually described abdominal bracing (tightening the lower backs, holding your breath and therefore causing a depression of the pelvic floor.) The exact opposite of what is actually taught in Pilates, and specifically in the APPI approach.

You will see in this ultrasound evidence below the difference between the concept of 'centre' as we propose it, and the concept of 'abdominal bracing'.



Rest

Elevation – 'centre'

Depression – bracing

The first image here is of the pelvic floor at rest, marked with an astrix against the bladder. The second shows the nice lift, elevation, of the pelvic floor with correct pilates 'centre' activation. The third shows depression, occurring with a bracing, or bearing down movement, exactly as proposed by Stuart McGill.

As we all know Pilates teaches a gentle contraction of the lower abdominals, looking for co-activation with the pelvic floor, as described in Ruth Sapsford research of 2001, another fine example of relevant research that was ignored in this article.

The article then moves on to investigate the theories that the relevance of a 'strong core' and performance in professional athletes is also false. It is here that the terminology changes significantly. Now we have moved onto 'core strength' training, as opposed to core stability training. As we know these are two very different concepts. I find it fascinating that the article has used the reference to footballers. Having worked in various forms of football over the past 10 years, including with Manchester United, Tottenham, Arsenal and Charlton Athletic, the main problem is that most elite footballers actually have very good 'core strength', but very poor 'core stability', a leading cause of injury in elite athletes. The difference between these two concepts seems to have been missed quite dramatically in this article. For the benefit of doubt, it may have been that there was not enough scope to go into this in detail.

The article then concludes that even if you are not doing Pilates for pain and health benefits, but for aesthetic benefits then you are once again wasting your time.

Highlighting research from the American Council of Exercise that conducted a study on the calories burned in a Pilates class and its claims of achieving a long, lean, toned body. As you all know, and is widespread common knowledge in the Pilates world, Pilates is not focused on calorie burning, but is focused on muscle toning, flexibility and mobility.

A study based on calorie burning completely misses the point. Pilates is, and always has been, part of a balanced program, indeed, the recent proliferation of Cardio Based Pilates shows this is common knowledge. However, this does not mean that Pilates is not a fantastic way to get into shape. I am amazed at this assumption given the author, Peta Bee, was awarded fitness professional of the year in 2003. If one was to take this piece of research used to formulate this argument, one would say that strength training of any sort is not relevant, and just ensure you get on a treadmill or bike and burn calories. Forget about muscle adaptation, hypertrophy, muscle memory and the many other benefits that a well rounded program like Pilates delivers. Forget about stretching, forget about the after effects of cardio exercise such as tightening of the muscles used and forget about the benefits of correcting biomechanical flaws prior to loading the body with loaded exercises that burn calories. As a physiotherapist, this sounds fantastic, as it would lead to a lot more clients with a multitude of injuries that would have been prevented by a well rounded Pilates program. Once again, perhaps the author was just using this as an example, but for the lay person reading this it is quite limiting.

Lastly we come to the part of the article that sadly the majority of lay people out there may take from this piece, the exercises to do instead of Pilates. The article proposes the following exercises:

- 1) Squats, dead lifts and overhead presses – Three of the most aggravating exercises one could possibly do for a person in back pain, recovering from back pain, or with any history of back pain. The dead lift move in particular. At the mid-point of this exercise the arms are extending, the back is straight but in a flexion load position, and the weight is as far from the axis of movement as possible. This places the most extreme load on the lumbar disc as possible. I find it amazing that the times has published such advise, and just hope that the general public do not follow this advise and get injured. I would hate to see a case be bought against the time for such ill fated advise.
- 2) Secondly the reader is advised to stop doing all core stability exercise, pick up a medicine ball instead. The advantage it says is 'so the weighted ball allows the body to move in different directions'. Now we are advising the reader to undertake flexion/rotation movements with a weighted ball, with no underlying abdominal support. Once again, one of the most common ways to injure your back, especially to create a disc injury.

Finally, in the articles defence, Professor Lederman states that if you are doing core stability exercises, do not make it all you do, vary your exercise, and if you do have back pain, to see a specialist.

This is great advise, it is such a shame that it comes after recommending some of the worst exercises for back pain one can undertake. Please note the exercises were not proposed by Professor Lederman or by the author Peta Bee. However, they were still published, and in a way that the reader is able to follow, without perhaps, having read the article in entirety.

I now ask all of you to take the Times to task on this very poorly informed article. Peta can be contacted on peta@patabee.co.uk, and the times is taking comment on thetimes.co.uk/life

I have personally written to the times and directly to Pete Bee to ask that we publish a reply to this article to ensure that the general public are as well informed as possible. I will also be sending this piece to all the other Pilates Institutes and asking for their support. I will also be sending this to Frontline, Fitpro, REPS and any other organisation in the health and fitness industry. I am asking you to join me and please bombard the Times, the CSP and any other media outlet to publish my response on your behalf. We cannot let such misguided information remain unchallenged, if for nothing else but the health of the public who need us to steer them accurately through their battles with back pain.

Kind regards,

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