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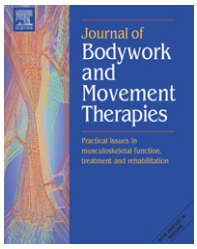

PREVENTION & REHABILITATION: EDITORIAL

Decision making in Pilates

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A young Profession

In a February edition of Sports Illustrated, the journalist Wernick (1962) described his regular sessions in New York with the 'gruff, Teutonic,' Joseph Pilates. 'Contrology' was the exercise system developed by Joseph Pilates that is now commonly known by his last name. Wernick says in his article, 'Don't ask me what contrology is. Don't ask Joe either, for orderly exposition is not his specialty. Contrology has something to do with rational tension and relaxation of the muscles, and it comes from a profound knowledge of bodily kinetics learned in no classroom. Joe figured out the principles…in Germany by watching children at play and animals in the forest.' Wernick concluded that the highest accolade Joe could 'bellow' after the eventual, successful demonstration of an exercise, worked on for some time was, 'Now you are an animal!'

The Pilates discipline is still a relatively young profession with a burgeoning scientific proof, largely 'borrowed' from motor control research, as there is limited high quality research defending the technique (Bernardo, 2007). It is perhaps similar to complementary therapies that have valuable input in treating and preventing a myriad of conditions, syndromes or injuries but have yet to fully convince the world of science of their rightful places in 'evidence based practice.'

After Joseph Pilates death his technique was initially taught to others by his protégées: Mary Bowen, Ron Fletcher, Eve Gentry, Kathy Grant, Romana Kryzanowska, Lolita san Miguel, Carola Trier. Some sources, such as the Pilates Method Alliance, refer to some or all of the Protégées as 'Elders.'

I interviewed Fritzke and Voogt (2007), Pilates Teachers (developers of the Triadball), in 2007 at a Body Control Pilates Conference in London. Fritzke and Voogt had come to the conclusion, after discussions with several of the 'Elders,' that Joe Pilates had taught in reaction to 'the body in front of him.' In other words he altered his approach to each individual clients needs. This means that the differences between the 'Elders' approaches, and their eventual Pilates certification programs, were, in part, due to the differences in emphasis Joseph Pilates was required to take in adapting his technique for their individual bodies. Fritzke and Voogt report that each 'Elder' could only interpret '*their* piece of the puzzle…in essence the variety of approaches to the Pilates concept is only due to the interpretive differences of the same philosophy.' I took from that interview the inclusive and positive idea that each different Pilates approach has merit, and is worth investigation.

Bias

Later generations of teacher trainees now work to certification syllabi, under a variety of organisations with long or short courses. I have noted that most Pilates Teachers come to the profession for a second, or ancillary career. I have tried to analyse those who begin to train as Pilates Teachers and have sub-grouped them. There are the:

- 'Ex-dancers' - very movement aware people who are knowledgeable about how to learn movement.
- 'Pilates Converts' - usually at one point having had a 'Road to Damascus' moment when they realised that Pilates exercise had 'saved' them. They can be very enthusiastic teachers having rehabilitated themselves from injury or poor physical conditions.
- 'Change-of-Lifers' - use the teaching of Pilates as an antidote for previous, unfulfilling, often office based, careers. These teachers may also struggle with their own lack of movement awareness.
- 'Fitness Professionals' - they bolt-on a Pilates training to improve their curriculum vitae and may develop a very rounded understanding to the entire fitness sphere.

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- 'Therapists' - a sub-group who want to use Pilates as an extra weapon in their therapy tool kit.

What is clear is that they all bring different skills to the Pilates table. This means that the diverse pool of potential clients have a group of equally diverse teachers they can choose from, which can only be beneficial for all.

What a newly graduated Pilates Teacher soon learns is that, what worked for them personally while learning the movement does not necessarily translate well to all their clients. What they must recognise is that they have developed biases — an ex-dancer who is hyper-mobile will not necessarily have experienced what it is to be very tight, a Fitness Professional may want to work a client hard to strengthen them when the client actually needs to learn to find the *least* effort required to successfully achieve a movement, or sustain a posture.

As a member of the 'Therapist' sub-group I always asked, on my Pilates training course, over and over, 'Why do we do this exercise?' It took me a long time through the course to answer my own question. 'Sometimes it is just about the movement.'

A famous Pilates quote (Pilates and Miller 1945) says that a man is as young as his spine. 'If your spine is inflexibly stiff at 30, you are old; if it is completely flexible at 60, you are young….' I believe that, as we mature from childhood to adulthood, we change the way we move. In the first part of life we learn to move. Later, due to the pressures of work, family, or the mode of life we choose, we start reducing the types and amount of movements we make. The eventual net effect is that, over time, we lose available joint and muscle range, *and* the flexibility of the brain to request such movement of our bodies. We become habituated and move only to this limited template. Eventually, in old age, we become almost completely sedentary and prepare to die.

Movement therapies and disciplines such as Tai Chi, Feldenkrais, Yoga, as well as Pilates, keep us moving in unaccustomed ways, keeping the mind—body connections intact and the movement control centres of the brain active, helping keep us young.

Recognising that a Pilates Teacher's decisions regarding their clients are 'informed by their bias' is important, but so too are the attempts a Pilates Teacher must make to balance their bias — with the choice of what extra training they should undertake in their continuing professional development, or at least being prepared to refer clients sideways to other members of their profession as well as upstream to health professionals or downstream to other types of fitness professionals (CV-fitness), or Sports Coaches.

What is pilates?

My current definition of Pilates exercises are, 'generally integrated, whole body movements, involving low and/or high threshold muscle contraction, often in sequence, exploring both neutral and full joint ranges'.

The integrated movements in Pilates usually differs from traditional 'isolated' gym based strength training exercise, though later in this Prevention and Rehabilitation section Craig Liebenson discusses the 'Turkish get up' a functional strength training exercise that, like Pilates, relies on the quality, not the quantity of movement.

Pilates (the technique), due to the differences of its approaches of Pilates' (the man) protégées, has now developed traditional and evolving strands. Traditional Pilates involves keeping the repertoire as it was when Joseph Pilates died. 'Evolved' Pilates teachers are likely to be reading this piece critically, ready to adapt their process once scientific proof confirms their need to, but are also ready to reject unsubstantiated, perhaps harmful belief.

Types of pilates

There are many differences in the way that Pilates is taught. It is often divided into two broad types of Pilates. 'Matwork' and 'Apparatus' based work using Pilates Machines. Matwork is usually floor-based exercises practiced with the possible addition of small pieces of equipment: balls, foam rollers, theraband, and arced barrels - to mention a few.

Apparatus based Pilates use machines such as Reformers, Cadillac's (Trapeze tables), Wonder (Stability) chairs, Wall units and Ladder barrels, devised by Joseph Pilates himself.

Classes are often taught '1 to 1', or in small or larger groups, and often run for an hour. Another style of teaching an Apparatus based class is known as a Studio class. In this style a teacher runs a class of up to, say 6 people. The class is often longer, at around 90 min. Sometimes the clients come in as a group or the clients come in at staggered times, allowing the teacher a few minutes to work with each client individually, then setting each client on their way through a program, using exercises from the repertoire most suited to their needs.

Matwork classes particularly, can be developed for the specific group attending the class. They can range from 'Pre-Pilates classes' for those who require more hand-holding than those wanting to join a 'Beginners' class. Those who are gaining technique and ability can go to 'Intermediate' classes, eventually graduating into 'Advanced' classes. 'Fitness based Pilates' often involves classes with a larger number of participants, undertaken in a gym's aerobic studio and can be designed to cater for those who have to be sweating and 'feeling the burn' to know they are actually exercising. 'Rehab' classes can be linked to a particular condition and are often associated with clinics providing physical therapies. 'Low back pain Pilates' or 'Pregnancy Pilates' classes are examples of such groups. 'Classical Pilates' classes can be as Joseph Pilates himself actually taught them, using the same exercises in exactly the same order. Combining other disciplines names with Pilates (something-or-other-ilates) is also fashionable and can sell — take for example 'Yogalates' or possibly 'Chair-ilates' for the elderly.

How do Pilates Teacher assess?

Fritzke and Voogt answered a question I put to them in 2007 about how Pilates Teachers assess their clients, by saying that, 'most of the time it is about asking the client questions and seeing them walk, but from a Pilates point of

view, it is once they start the movement of the basic exercises that a Teacher starts to get feedback…The body never lies, no matter what they write on their form or 'forget' to tell you. You immediately see it, the evidence of that rotator cuff tear, the past ankle injury….'

They went on to say, 'Most certification programs do not have a full assessment of the client,' like that of a clinician. 'Most programs of Pilates have an official basic, intermediate and advanced program, so the way we teach, is to talk to the client, see how they are, to choose which 'start' is appropriate. We then give them a basic exercise on the piece of equipment we have chosen. We can then quickly see that we need to go in this or that direction. You build up from there.'

To a clinician treating those with injuries this approach may seem cavalier, but for the types of Pilates in which the clients are fit and well it is entirely normal and correct. A dancer does not learn to dance by discussing the problems of movement; it is an experiential learning process.

Typical Pilates assessment includes a 'Roll down', an exercise in standing that uses a sequential flexion pattern of the spine, through to the hips as the hands reach towards the floor. The observational skills of the Pilates Teacher come into play, looking at sequencing, flow, tightness's, rotations of the trunk, asymmetries, and decisions are made from there. Teachers take in to account how the client is 'today', and 'in relation to previous sessions.' In fact, it is the principles of Pilates: centre, concentration, control, precision, breath, and flow that become the key points of assessment in a traditional Pilates assessment process.

Are further assessment tools and knowledge required?

It is when special populations are involved that such assessments possibly become inadequate. It is in the blur between injury and risk that Pilates Teachers decisions become potentially more serious. I suggested, in a previous Editorial, 'About Prevention' (McNeill, 2010), that thought about a Pilates Teachers insurance policy may often be the bottom line deciding whether a Pilates Teacher can see a client in pain or not, but Pilates teachers must be trained to at least recognise red flags. (Negrini et al., 2008) These may warn of potentially dangerous findings, or illnesses such as tumours (the presence of night pain or pain at rest, the unexplained loss of weight or appetite), or spinal cord compression (urinary retention), amongst others. Yellow flags (Negrini et al., 2008) too, might be considered important for a Pilates teacher to know about, in which psycho-social factors that can affect rehabilitation and recovery are identified. Factors relating to beliefs about pain being damaging, the adoption of a sick role, and depression amongst others. Admittedly the attendance at a Pilates class may indicate the client is preparing to take on the responsibility of exercise for themselves which is likely to be a positive modifier on some of the yellow flag questions.

As a Physiotherapist I have many clients referred to me by my Pilates colleagues, I assess and provide a plan to enable the client to continue with, or to return to exercise, by explanations, modification of their activities of daily living and exercise prescription. I regularly spend a significant amount of contact time managing expectations of recovery time. Most clients 'know' it takes something like 3 weeks to heal a ligament and 6 weeks to heal a broken bone, and are shocked when I point out that those time scales are not exactly true in every case. A fracture can take a year to go through to its full recovery phase. A ligament can take longer to heal the higher the grade of the sprain.

By identifying to a client the direction of movement that stresses an inflamed, injured soft tissue, they can understand that the swelling related to that inflammation can create a pressure sensitive mechanical pain. This pain will not necessarily disappear until the swelling decreases, but neither will the swelling go till the injured tissues have been protected. Stopping all movement into the aggravating direction provides the protection. Even then, the protection has to be effective for some time, possibly weeks, before the swelling can reduce significantly enough to cease triggering pain.

Butler and Moselely's (2003) Explain Pain and its tools, 'Education and understanding', 'Your hurts won't harm you', 'Pacing and graded exposure' and 'Accessing the virtual body' are easily grasped by the layman. This book should be required reading for every Pilates Teacher and Teacher trainee.

A Pilates teacher should be taught enough patho-physiology to understand healing times and to be able to manage expectations of recovery for their clients. Their clients may be out of pain but still be 'healing' and therefore remain at risk. The UK's National Health Service expects its Physiotherapists to predict what percentage of improvement can be expected from a set number of treatment sessions. Perhaps realistic predictions of improvements over time could be taught to Pilates Teachers who work with rehab clients. A client who is told to expect a 50% improvement in their discomfort and movement control following their non-operative ski injury to their knee, over a six month period, may respond more favourably than the same client being told they would be back to normal after six weeks of exercise, and didn't achieve this prediction.

Pilates can, unfortunately, injure its devotees, and keeping the rehabilitating exerciser's injured part around a neutral position for enough time to allow healing to firmly establish, may mean modification of repertoire, for a long time, to keep the goals of the Pilates sessions on track.

Most Pilates teachers are aware of some of the inherent risks within Pilates itself. Pilates has a bias towards spinal flexion in many of its exercises, and a bias to unsupported neck flexion (in exercises like 'the hundreds') to name but two biases. Moira Stott Merrithew of Stott Pilates, a well-known figure in the world of Pilates, developed disk bulges in her neck *after* training as a Pilates Teacher. This prompted her study of anatomy and subsequent modification of Pilates repertoire. She reports this in her biography at her website. (see web source).

Sahrmann (2002) describes muscle and recruitment pattern impairments in her book 'Diagnosis and treatment of movement impairment syndromes.' She identifies that shortened or stiff muscles may recruit earlier in a muscular synergy instead of the more appropriate prime mover. This change in muscular emphasis can alter the path that the bones make during a movement, potentially leading to

injury. A well-described set of variables involving relationships of muscular length, under-recruitment of stabilising musculature or over-recruitment of inappropriate musculature can be responsible for the movement impairment. When I assess clients for movement impairments I look for 'substitutions' — situations in which another muscle has taken over the dominance in a synergy, such as the recruitment of stronger (stiffer), and often, shorter hip flexors instead of the weaker abdominals in a trunk curl. The discussion of trunk curling sit-ups in chapter three is well worth a read in Sahrmann's book. Pilates Teachers have the observational skills to read the sometimes, subtle, signs of a substitution. If superficial hip flexors dominate in a 'roll up' (a supine trunk curling pilates exercise with straight legs) the pelvis may not release into a posterior tilt to aid the lumbar flexion component of the exercise. Instead the pelvis may stay neutral or even anteriorly tilt creating a stutter in the roll up as the lumbar spine does not flex early enough.

Sahrmann (2002) often identifies the Tensor Fascia Lata (TFL) and its propensity to activate in many of the hip movement impairment syndromes that she describes. A Pilates teacher therefore, may require knowledge of *which* hip flexor (iliopsoas vs. rectus femoris vs. TFL) is short, as this may alter decision making in exercise design, as well as altering the cueing and focus of the subsequent exercise. The Modified Thomas Test (Hattam and Smeatham, 2010) distinguishing which individual hip flexor is tight may therefore be indicated as a useful test for Pilates Teachers to know and use.

I know my superficial hip flexors recruit more often in actions that my abdominals should be controlling, and I am both a physiotherapist *and* a Pilates teacher. I am only just starting to gain some control in this area after a year of regular once a week work on a 1 to 1 basis. (Admittedly this improvement could probably have been sped up by more regular supervised Pilates classes, and following up the sessions with homework exercise). Strengthening my under-recruited, weak abdominals has been difficult for me to even feel, let alone access, as my over-recruited superficial hip flexors work so efficiently and automatically. It took me months to 'physically know' how much they over contributed to my abdominal work even though I knew it intellectually.

Just using Pilates exercises (which are not often functional movements), could leave a Pilates practitioner 'good at practicing Pilates' but 'poor in practicing functional movement.' In my observation of my clients some spontaneously improve in functional movement at the same time as they do during their non-functional exercise. Some do not, and these clients clearly need to be led into their functional improvement.

If 'Pilates assessments' only look at 'Pilates movements' there may be motor control deficits lying undiscovered. I believe that Pilates Teachers should be taught wider forms of assessment.

In the 'About Prevention' editorial I discussed the need for the screening of function, identifying Comerford's (2009, & web source)'Performance Matrix' and 'Cook's (2009, & web source) Functional Movement Screen' as possible contenders.

Neural states and their effects on creating protective spasm in muscles such as the hamstrings found by slump stretch tests (Butler, 2000), or in the upper shoulder musculature by the upper limb neurodynamic tests (Butler, 2000; Walsh, 2005) could alert a Pilates Teacher to avoid or alter some exercise choices. Neurodynamics as described in Butler's, 'The sensitive nervous system', is an important concept for all body workers and exercise professionals.

I am not saying that a Pilates Teacher should become a clinician — treating pain, I'm just asking for acceptance that those Pilates Teachers who work with clients, recently in pain, and who have the potential to slide backwards in their rehab, should be familiar with the relevant tests that confirm the need for referral.

Not just assessment

Pilates Certification boards have a duty to provide up-to-date medical science information and courses for their members through their continuing professional development programs. Chaitow (2010) reported to me that he has treated Pilates Teachers showing symptoms of hypertonic pelvic floors. This suggests to me that cueing Pilates exercise with a prime focus on pulling up the pelvic floor as the standard 'way in' to access the abdominals, can encourage an over-recruitment of the pelvic floor. This cueing, while beneficial for those with weak pelvic floors, is not necessarily beneficial for all, and can encourage pelvic floor hyper-tonicity. Seeking appropriate knowledge on this subject, particularly using texts written by experts in their fields aimed at the lay person, such as O'Dwyer's (2008)'My pelvic flaw', can help Pilates Teachers alter their cueing and practice to fit current concepts.

Recently linked with pelvic floor problems is the poor use of the diaphragm in breathing (Hung et al., 2010) and is highlighted in Leon Chaitow's blog (see link under web sources). Breathing, a fundamental component of the Pilates technique (Pilates and Miller, 1945), can, in my view, sometimes concentrate on the 'stylised' Pilates breathing patterns so much so, that normal breathing patterns can perhaps be negatively affected. Understanding breath from a therapeutic point of view such as gleaning information from reading such books as Chaitow et al. (2002) Multidisciplinary approaches to breathing pattern disorders, may add to a Pilates Teachers knowledge base and give them more tools to apply when teaching their clients Pilates exercise.

Not just pilates

In the quest for scientific proof, those that contribute to or read the Journal of Bodywork and Movement Therapies, may come from disciplines that have needed to work hard to gain a full or partial acceptance from the more pure medical science world. Like Pilates, there will be areas of those disciplines that will continue to operate outside of the 'proofs,' as they may be too difficult to test with our current methodologies, or, that the popular uptake assures their continuation *without* scientific validation. This is a perfectly appropriate state of affairs as it provides a bank of material ripe for investigation by later generations.

The Pilates model can be used as a case study of other bodywork and movement therapies in which we accept the

parts of the disciplines that are currently being placed under scientific observation as having their validity assessed and other parts that may, in future times, be assessed under the same gaze. We should accept the differences *within* our professions, actively seeking to weed out the concepts that injure or harm, and consider new ways of justifying the things we 'know' work but can't quite, just at the minute, say why.

The rest of this Prevention and Rehabilitation section

I invite you to read two interesting papers.

Öhman et al.'s Qualtative review of Feldenkrais as a group therapy for chronic pain. Reading it in the light of this editorial may draw some similarities in the states of both Pilates and Feldenkrais professions and their development.

Traditional dance, in this paper by Kaltsatou et al., is shown to be both psychologically and physically beneficial to breast cancer survivors.

References

Bernardo, L., 2007. The effectiveness of Pilates training in healthy adults: an appraisal of the research literature. Journal of Bodywork and Movement Therapies 11 (2), 106—110.

Butler, D., Moseley, G.L., 2003. Explain Pain. Noigroup Publications, Adelaide.

Butler, D., 2000. The Sensitive Nervous System. Noigroup Publications, Adelaide, Australia.

Chaitow, L., 2010 Personal correspondence.

Chaitow, L., Bradley, D., Gilbert, C., 2002. Multidisciplinary Approaches to Breathing Pattern Disorders. Churchill Livingstone / Elsevier.

Comerford, M.J., 2009. Recurrence of injury and pain in sport - what's missing. Manual Therapy 14 (5), S1—S54.

Cook, G., 2009. What is our baseline for movement? The clinical need for movement screening and assessment. Manual Therapy 14 (5), S1—S54.

Fritzke, M., Voogt, T., 2007. Unpublished, recorded interview.

Hattam, P., Smeatham, A., 2010. Special Tests in Musculoskeletal Examination. Elsevier, pp. 167—169.

Hung, H.C., Hsiao, S.M., Chih, S.Y., Lin, H.H., Tsauo, J.Y., 2010. An alternative intervention for urinary incontinence: retraining diaphragmatic, deep abdominal and pelvic floor muscle coordinated function. Manual Therapy 15 (3), 273—279.

McNeill, W., 2010. About prevention. Journal of Bodywork and Movement Therapies 14 (3), 289—293.

Negrini, S., Fusco, C., Atanasio, S., Romano, M., Zaina, F., 2008. Low back pain: state of art. European Journal of Pain Supplements 2, 52—56.

O'Dwyer, M., 2008. My Pelvic Flaw. Redsok Publishing.

Pilates, J.H., Miller, W.J., 1945. Return to Life through Contrology. J.J. Augustin, New York.

Sahrmann, S., 2002. Diagnosis and Treatment of Movement Impairment Syndromes. Mosby.

Walsh, 2005. Upper limb neural tension testing and mobilization. Fact fiction and a practical approach. Journal of Hand Therapy 18 (2), 241—258.

Wernick, R., 1962. To keep in shape: act like an animal. Sports Illustrated.

Web sources

http://www.stottpilates.be/aboutus/biomoira.html.
http://chaitowschat-leon.blogspot.com/.
www.functionalmovement.com.
www.performance-stability.com.