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Diastasis rectus abdominis: physiotherapy management

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Abstract

Diastasis rectus abdominis (DRA) refers to thinning and widening of the linea alba, and is associated with increased laxity of the anterior abdominal wall. It is currently diagnosed in relation to inter-recti distance; however, no definitive consensus currently exists about either relevant diagnostic criteria or the prevalence of the condition. Developments in the limited research base have highlighted the importance of considering other factors beyond the gap, including the function of the abdominal wall. In order to assist clinicians in evaluating and managing DRA, a proforma has been developed that is called PPP-RR-LD. This acronym stands for “person, patterns, posture, respiration, ribcage, load and defect”, and represents the different aspects of assessment and management that must be addressed in individuals with DRA. There is also a need for physiotherapists to increase their profile in order to: become better recognized for what they can offer in the conservative management of this condition; and develop services that will establish the role of physiotherapy in the pre- and postoperative rehabilitation of individuals who undergo surgical repair of DRA.

Keywords: diastasis rectus abdominis, inter-recti distance, linea alba, proforma, rehabilitation.

Introduction

Diastasis rectus abdominis (DRA) is characterized by thinning and widening of the linea alba (Fig. 1), and is associated with increased laxity of the anterior abdominal wall (Mommers *et al.* 2017). The prevalence of DRA remains largely unknown, and there are no definitive diagnostic criteria to guide diagnosis. However, it is increasingly believed that some degree of separation is normal and expected in pregnancy. By week 35 of gestation, 100% of women have been shown to have DRA (Fernandes da Mota *et al.* 2015).

Diastasis tends to be quantified in terms of inter-recti distance (IRD) using the classification outlined by Beer *et al.* (2009) that specifies a normal IRD up to 15 mm at the xiphoid level, up to 22 mm at 3 cm above the umbilicus and up to 16 mm at 2 cm below it. Real-time ultrasound provides the gold standard for assessment; however, palpation measuring finger widths is accepted as the most clinically utilized approach

(Keeler *et al.* 2012). This raises the present author’s concerns regarding the validity of the measurements that physiotherapists are taking. Variation in finger width alongside the actual method of assessment (e.g. patient position, or whether it is recorded at rest or during an active exercise) highlight the potential for measurement disparities and errors to occur.

Developments in the limited research into DRA have raised awareness of the need to focus beyond the gap (Lee & Hodges 2016; Hills *et al.* 2018). Factors such as load transfer across the abdominal wall, and abdominal strength and function should be considered. A study by Lee & Hodges (2016) has also furthered our understanding of the debate about whether to approach rehabilitation by targeting rectus abdominis (RA) or transversus abdominis (TVA) training. It is well established that RA activation reduces the IRD, while TVA activation widens it. Research by Lee & Hodges (2016) demonstrated that, while this is true, RA activation has the potential to distort the linea alba as the rectus bellies approximate. Pre-activation of the TVA followed by RA activation demonstrated better behaviour and load transfer at the linea alba.

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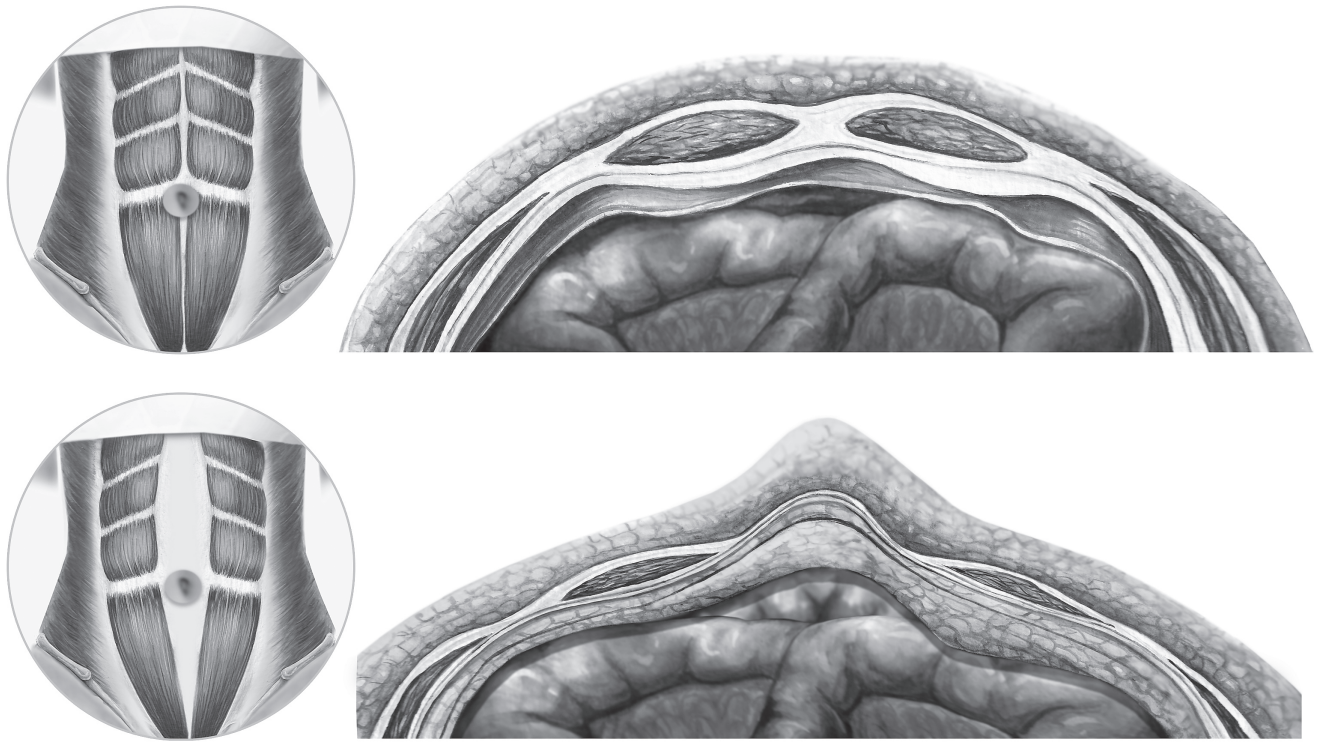


Figure 1. Normal abdominal wall versus abdominal wall with diastasis rectus abdominis.

The relationship between DRA and comorbid conditions such as low back pain and pelvic floor dysfunction (PFD) continues to be unclear. The potential for increased risk of PFD should not be overlooked until further research guides practice. A recent systematic review confirmed that there is a weak correlation between DRA and pelvic organ prolapse (Benjamin *et al.* 2018). There are many other factors that physiotherapists consider important to assess within a biopsychosocial model of care. In order to provide physiotherapists with a framework to work against, the present author has developed a proforma for the assessment and management of DRA.

Assessment and management proforma

In order to assist clinicians evaluating and managing DRA, a proforma has been developed by the present author:

PPP-RR-LD

This acronym stands for “person, patterns, posture, respiration, ribcage, load and defect”, and represents the different aspects of assessment that are important to evaluate and address in individuals with DRA. A useful mnemonic for this proforma is: “Preventing pregnancy pressure restores rectus, lessening diastasis.”

Person

An important element of assessing and managing all individuals with DRA is establishing their stories:

- Who are they?
- What do they do?
- How have they come to attend your clinic?
- Is this a recent diagnosis of DRA, or one that they have carried for several years while they went on to complete a family?
- Who diagnosed it?
- What do they understand by the term DRA?
- What is their baseline function and exercise level?

The rehabilitation goals of the elite sporting athlete who is keen to return to competitive sports are likely to differ from those of the day-to-day mum who is looking to get back to recreational exercise. Another important factor to establish is the patient’s expectation for rehabilitation. Is it realistic and something that can be achieved through conservative rehabilitation? Diastasis rectus abdominis is negatively correlated with body image (Keshwani *et al.* 2018) and quality of life (Benjamin *et al.* 2018), which highlights the importance of considering the individual as the initial step of his or her evaluation.

Posture

It is understood that body position can influence IRD in individuals with DRA. Inter-recti distance is naturally wider in upright positions (Gillard *et al.* 2018). The specific influence of posture on DRA requires further investigation. However, poor posture, specifically in relation to forward head posture, has been demonstrated to make an impact upon respiratory function by reducing forced vital capacity, and increasing activity in the upper anterior neck muscles (Kang *et al.* 2018). Furthermore, it has been established that non-optimal posture is correlated with negative self-efficacy, confidence and body image (Briñol *et al.* 2009; Pop *et al.* 2016). Different postures may also negatively influence motor recruitment (Claus *et al.* 2009). Assessing and optimizing a range of postures for women with DRA to move through is advised.

Patterns

Clients with DRA often compensate for reduced abdominal wall function and pressure management by developing holding patterns (e.g. upper abdominal gripping). It is important to assess possible overactivity of the oblique muscles; despite the absence of substantial published research, bracing of the superficial abdominal wall is a phenomenon accepted by experienced clinicians who treat DRA. Chest gripping and bracing, which is a similar concept, has been identified in subjects with pelvic girdle pain. This has been linked to increases in intra-abdominal pressure (IAP) and respiratory rate, and the potential to depress the pelvic floor in subjects with pelvic girdle pain (Beales *et al.* 2009). Assessing for potential patterns in the pelvic floor, and the ability to achieve co-contraction of the TVA and pelvic floor muscles (PFMs) is also important (Bø *et al.* 2009). Identification and management of dysfunctional patterns should be addressed prior to loading the abdominal wall with exercises.

Respiration

It has been well established that the diaphragm, abdominal wall and pelvic floor are intimately linked, and function with coordinated activation and relaxation (Hodges *et al.* 2007; Lee *et al.* 2008; Park & Han 2015). This synergistic relationship plays a role in IAP management, which is often affected by DRA. The ability to utilize breathing strategies to re-educate individuals about IAP management and restore coordination between these structures should not be

overlooked. For example, breathing encourages a natural recruitment of the TVA during exhalation (Hodges *et al.* 2007), and can be utilized to assist neuromuscular rehabilitation in women with DRA. Breathing is an important component in the physiotherapy approach to down-training overactive abdominal or PFMs, and its impact on the vagus nerve influences our overall sense of well-being (Breit *et al.* 2018).

Ribcage

Closer evaluation of the ribcage for symmetry, flaring, infrasternal angle, thoracic expansion and mobility can provide important information about components that need to be addressed during rehabilitation. For example, rib flare during low-level abdominal loading highlights a compensatory strategy to increase stability and function at the trunk. This is as a result of underlying abdominal weakness or altered abdominal load transfer. Targeting DRA rehabilitation within the load and range of movement that avoids such compensatory strategies facilitates recovery.

Load

A key component of evaluating DRA is assessing what happens during abdominal loading tasks. Do the muscles dome or sink at the midline, which would indicate an inability to adequately manage IAP? Is there flaring at the ribs or arching at the upper back during the task? Do individuals hold their breath, or over-recruit their jaw and deep neck flexor muscles? What is happening at the pelvic floor? Is it also being overloaded, or is it responding by increasing tone and gripping? Real-time ultrasound is a useful tool for physiotherapists with appropriate training who want to quantitatively assess muscle morphological and functional integrity during active loading performed by individuals with DRA (Iwan *et al.* 2014).

We do not know whether the established principles of tissue loading apply to the linea alba and DRA. Mechanical loading is understood to provide one of the strongest stimuli to the adaptation of matrix tissue and tissue healing (Kjær *et al.* 2009), and forms a key component in tendon rehabilitation. In terms of DRA, we should aim to assess each patient individually in order to prescribe the maximum abdominal loading that they can achieve in terms of IAP management and lumbopelvic stability. Physiotherapists should also consider RA muscle function and rotational trunk movements that are often compromised with DRA (Hills *et al.* 2018).

Defect

Abdominal wall defects (e.g. umbilical and epigastric hernias) can occur as a result of pregnancy, and the associated increase in pressure and strain on the abdominal wall structures. This may be further impacted by DRA. There is a likelihood that physiotherapists who assess and treat DRA will encounter women with an abdominal wall defect. Clinicians should work within their scope of practice, and not make a diagnosis of abdominal wall hernia. Patients should be referred back to their general practitioner for further evaluation of a potential hernia while they continue their rehabilitation.

Surgical management

Like any speciality within physiotherapy, conservative management will not meet the needs of all individuals. Some women with DRA may require surgical evaluation. However, the role of physiotherapy in the conservative management of DRA is not well recognized within the surgical professions (Mommers *et al.* 2017).

A survey of plastic surgeons throughout the UK and Ireland carried out by the present author further highlighted the need for physiotherapists to increase their profile as rehabilitation specialists for this population. Fifty per cent of surgeons surveyed considered DRA to be purely cosmetic, and no role for physiotherapists in pre- or postoperative management was indicated. Reported rehabilitation time frames ranged from 8 to 52 weeks postoperatively, highlighting an important area that would benefit from rehabilitation guidance provided by professionals who are specifically trained in this role. Physiotherapists need to push for service development, and establish themselves as key members of multidisciplinary teams managing DRA both conservatively and surgically.

Conclusion

Physiotherapists have crucial knowledge and skills to offer in the assessment and management of DRA. A useful proforma to assist clinicians in adopting a thorough, holistic approach to this has been developed, PPP-RR-LD. Physiotherapists need to increase awareness of what they can offer this population, and also become more established in the management of those women with DRA who will go on to undergo surgery.

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Gráinne Donnelly graduated from the University of Ulster, Newtownabbey, County Antrim, Northern Ireland, in 2008 with a BSc in physiotherapy. She developed and consolidated her general physiotherapy knowledge and skills by taking up a post as a specialist in pelvic, obstetric and gynaecological physiotherapy in 2010. Gráinne became particularly interested in the assessment and treatment of DRA because of its prevalence among her clients.