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OPINION

Paediatric pelvic floor physiotherapy: a clinical commentary

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Abstract
The treatment of childhood bowel and bladder disorders is an emerging specialty of pelvic floor physiotherapy. Clinicians who have been solely trained in adult pelvic floor physiotherapy may feel ill-equipped to treat children because of their inadequate knowledge of the differences between adult and paediatric bowel and bladder disorders. This clinical commentary discusses the most common methods that are different in paediatric pelvic floor physiotherapy, and provide an insight into how it may be able to contribute to the field of paediatric urology and gastroenterology.

Keywords: childhood bowel and bladder disorders, paediatric pelvic floor physiotherapy, paediatric urology and gastroenterology.

Introduction

Pelvic floor physiotherapy is a growing specialty worldwide. Bowel and bladder disorders affect a significant percentage of the general population, and many patients who seek treatment for these types of dysfunction prefer more-conservative measures to medication or surgery. Some long-standing pelvic floor disorders can be traced back to poor childhood toileting habits that were ignored by the child's general practitioner and remained untreated. Since pelvic floor physiotherapy for adults attempts to understand how some of these disorders began, there is a push to identify these muscular dysfunctions earlier in order to decrease some of the physical disabilities created by long-term bowel and bladder issues.

Generally, most pelvic floor physiotherapists gravitate towards this specialty from traditional musculoskeletal physiotherapy, and therefore, they may not be familiar with neurological or paediatric issues. A lack of the baseline knowledge of both common diagnoses in the paediatric population and how the treatment of children differs from that of adults can complicate this shift in practice. Children are not small adults, and the treatment methods that are commonly used in adult pelvic floor patients cannot always be translated easily into paediatric interventions. First and foremost, the treatment of children needs to be made enjoyable and fun in order to foster the therapeutic relationship between the practitioner and patient. When working with families of children with pelvic floor disorders, care needs to be taken because the clinician is not just treating one child but the entire family unit. The present clinical commentary explores the importance of paediatric physiotherapists working with this population, and education that they may need to seek so as to feel confident about designing long-term treatment programmes.

General considerations

Some of the most critical considerations in paediatric pelvic floor physiotherapy are motor control, and postural issues in relation to bowel and bladder dysfunction. Children with the latter problems often display difficulties with motor control, musculoskeletal pain and core stability (van Engelenburg-van Lonkhuyzen *et al.* 2017a). While physiotherapists who treat adults focus on these issues, there may be more emphasis on pelvic floor isolation as a result of long-standing dysfunction, or trauma to the muscles as a result of childbirth. Typically developing children will not experience this slow weakening of the pelvic floor or trauma to the region in the same way that an adult might, and therefore, inherent motor control is more critical in the paediatric

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population. While trauma to the pelvic floor can cause pelvic floor muscle (PFM) dysfunction in children with anorectal malformations or stress associated with toileting, this is not common in their typically developing peers (Chase & Schrale 2017). Children with neurological dysfunction have not experienced the same developmental sequencing as their typically developing counterparts, and therefore, they may need extra help in this area in order to attain bowel and bladder continence and control.

Developmental control of the pelvic floor does not begin to occur until a child spends more time in an upright position than supine or on all fours. This causes the diaphragm to intensify the pressure dynamic with the abdominal muscles to help with evacuation (Chase & Schrale 2017). While there is evidence of children becoming toilet trained before walking, complete continence without parental intervention does not occur until they can coordinate control with the sensation of bladder or bowel fullness. They will then understand how to create appropriate downward pressure with the diaphragm to cause detrusor contraction or puborectalis lengthening.

Bladder issues

Children can experience a variety of forms of lower urinary tract dysfunction (LUTD), including urinary incontinence, detrusor sphincter dyssynergia, urinary retention and enuresis. The International Children's Continence Society recommends that standard urotherapy should be the first-line treatment for children with any type of LUTD (Chang *et al.* 2017). Urotherapy includes age-appropriate education, promoting good toileting habits, bladder diaries, behavioural management, and support for patients and caregivers. While many physiotherapists may be comfortable with giving this advice to an adult, it is necessary to modify this type of educational and behavioural intervention for children with LUTD. For obvious reasons, they have smaller bodies, and therefore, may require a lower fluid intake. Children may also need different equipment for positioning themselves on the toilet because of their small stature and the relative size of adult facilities. Pelvic floor muscle exercise produces variable results in children depending on the diagnosis being treated and the method of instruction used (Nieuwhof-Leppink *et al.* 2019). For this reason, PFM isolation and exercise (i.e. Kegels) should only be used as one part of a comprehensive paediatric treatment programme.

When examining children for signs of LUTD-related PFM dysfunction, an internal examination is not necessary, and furthermore, has the potential to traumatize a patient. The utilization of external observation, post-void residual urine and urine flow can often provide a complete picture of a child's dysfunction, and the methods required to treat it (Chase & Schrale 2017). The relative position of the rectum to the urinary bladder in the pelvis must also be considered. If the patient is constipated, this problem must be treated first in order to allow for proper expansion of the bladder within the pelvis. However, not all bladder issues are caused by constipation, and the child's entire history must be considered before deciding on a treatment pathway.

One diagnosis that responds exceptionally well to pelvic floor physiotherapy is dysfunctional voiding. Also known as detrusor sphincter dyssynergia, this occurs when children cannot fully relax their urinary sphincters to void. This can lead to retention of urine, urgency and frequency. Biofeedback and pelvic floor physiotherapy can improve this clinical population's urine flow and symptoms affecting their quality of life, but these may not always improve their continence scores (Jacobsen *et al.* 2021).

Physiotherapists often make behavioural interventions for children with bladder dysfunction, and these can include fluid management, toilet positioning, awareness of the need to void and general voiding habits. Fluid management for children is different to that provided for adults, and can be calculated based on the child's weight. However, it may need to be adjusted if the child has restricted access to fluids at school. Interoception, i.e. the perception of the need to void, must be evaluated in children with voiding dysfunction, and treatment may require the assistance of a paediatric occupational therapist if it is found to be a problem (Ketai *et al.* 2016). Gross motor treatment to improve core stability and breathing will help children to control pressure on the detrusor muscle, and coactivate the pelvic floor with the abdominal muscles. Treatment for this population involves much less focus on the isolation of the pelvic floor, and more emphasis on the postural complex of the diaphragm, abdominal and back muscles, and the PFMs as a group.

Bowel issues

One of the most common childhood bowel issues is constipation, which has a worldwide

prevalence of between 0.7% and 29.6% (Mugie *et al.* 2011). This is true for both typically developing children, and those born with either neurological impairments or anorectal malformations (van Meegdenburg *et al.* 2015). Medical intervention is the primary treatment for multiple causes of constipation (e.g. Hirschsprung's disease), and physiotherapy may only be required as a second-line approach. However, the two leading causes of functional constipation can be addressed with pelvic floor physiotherapy treatment. Functional constipation can be caused by either slow transit movement in the colon or dyssynergic defecation. In the latter case, the puborectalis muscle is unable to adequately relax, or has a reduced ability to generate the downward pressure needed to evacuate the stool. As in adults, this type of constipation is often diagnosed by using anorectal manometry and X-ray studies to determine if the problem is visceral rather than muscular in nature.

Physiotherapy has not always been the first-line conservative treatment for children with constipation. Standard medical care previously consisted of education about constipation, dietary advice, the prescription of laxatives and behavioural interventions (van Engelenburg-van Lonkhuyzen *et al.* 2017b). As physiotherapy for adult constipation became more successful, physicians began to consider whether it could be an effective form of conservative treatment for paediatric patients. Much of the education provided to children and their parents about toilet posture and behavioural training was similar to that offered to adults by pelvic floor physiotherapists. However, as discussed above, this is not always the most appropriate course of action. Time spent on toilet training and the method used must be considered when designing a treatment programme for children with constipation.

Pelvic floor physiotherapy can be an effective conservative intervention for children with constipation compared to standard medical care, and may help to reduce the use of laxatives (van Engelenburg-van Lonkhuyzen *et al.* 2017b). It can also lower rates of hospitalization and benefit patients with pressure management issues, such as children with diastasis recti abdominis (Zar-Kessler *et al.* 2019). The treatment needs to focus on PFM relaxation, and take into account the coordination of the abdominal muscles with the PFMs and the ability to create pressure. Physiotherapists will often only focus on the ability to relax the puborectalis muscle. However, if this cannot be appropriately coordinated with tensing the abdomen and diaphragmatic movement, the child will not create the appropriate propulsive forces (Zar-Kessler *et al.* 2019).

Faecal incontinence is less common in children, but can still occur. Its causes are generally overflow incontinence from constipation, or weakness in the PFMs leading to leakage. In faecal incontinence, PFM strengthening, core stability and postural retraining are appropriate forms of intervention for children (Muddasani *et al.* 2017).

Physiotherapy treatment

Adult physiotherapy treatment of the pelvic floor often centres on interventions like Kegel exercises, biofeedback, electrical stimulation and exercise. Internal examinations are neither warranted or appropriate in children, and physiotherapy interventions should focus more on external techniques and exercise instead. Evidence shows that postural exercises, balance, locomotor training and breathing are more effective in this population than biofeedback exercises (Ladi-Seyedian *et al.* 2019). Physiotherapists must also bear in mind that children undergo rapid changes in cognitive function and sensorimotor understanding (Chase & Schrale 2017). Bowel and bladder functioning may change over time, which is why many paediatricians took a "wait and see" approach to pelvic floor dysfunction in the past. The expectation was that children would grow out of their problem, which has been proven not to be true. However, children mature at different rates, and may not be emotionally or cognitively ready for toilet training.

One approach to treating children is the Dutch physiotherapy protocol (van Engelenburg-van Lonkhuyzen *et al.* 2013). In this procedure, children are evaluated by medical history, motor control, posture and movement, and PFM assessment, which may or may not include a digital examination and rectal balloon measurement (van Engelenburg-van Lonkhuyzen *et al.* 2013). The latter will depend on the area of practice, and the practitioner and parent's comfort with the physiotherapist performing this type of assessment on a child. One could also question the usefulness of an internal examination for children who have already undergone multiple assessments by medical practitioners that can contribute to pelvic floor trauma and dysfunction. The physiotherapist's examination and treatment can rely on external perineal body assessment for the pelvic floor portion of the examination.

There are multiple methods of treating PFM issues in children that physiotherapists can employ. Some may be more-traditional pelvic floor physiotherapy methods, such as biofeedback and Kegel exercises. Biofeedback has been studied extensively as a conservative way to treat bowel and bladder dysfunction in children. Physiotherapists may use surface electromyography or internal sensors to help patients connect muscular functioning with bowel and bladder evacuation. Biofeedback for dysfunctional voiding and faecal incontinence has produced positive results, but more-definitive research is needed to determine its effectiveness in the treatment of constipation and other voiding disorders (Tremback-Ball *et al.* 2018). However, if these methods are not combined with gross motor treatment, patients undergoing postural retraining may fail to benefit from this conservative therapy.

Traditional elements of physiotherapy can be combined with exercise in order to improve trunk and pelvic floor strength, and motor control of the urinary sphincters. Kinesio taping is an appropriate adjunct to traditional exercise in children with urinary incontinence (Krajczy *et al.* 2018). Paediatric neurodevelopmental physiotherapists employ traditional gross motor strengthening methods that could help children with voiding dysfunction to regain muscular control of their core and pelvic floor (Rudolphi *et al.* 2020).

Conclusions

Pelvic floor physiotherapy can be an effective form of treatment for children with bowel and bladder dysfunction. Care must be taken to employ different treatment methods to those used for adult pelvic floor issues. Internal examinations are generally not recommended for children unless these are medically essential. Treatment should focus on postural control, improved breathing, general gross motor skills, neurodevelopmental treatment, and education about behavioural management of the bowel and bladder instead. Multidisciplinary treatment may be necessary to address all aspects of dysfunctional voiding in children. Play must be incorporated into the sessions in order to keep paediatric patients engaged with their treatment and focused on home compliance. The family and caregivers must be included in all aspects of treatment, and agree to the care plan to ensure optimal functional outcomes.

Pelvic floor physiotherapists should be an integral part of the treatment team, and can be an asset in the treatment of children by paediatric urologists and gastroenterologists. Pelvic floor physiotherapists should seek out additional training to help treat this specialized population (e.g. continuing education classes geared towards treating children). With the proper knowledge, this can be a rewarding group of patients to treat, and can be well integrated into any existing pelvic floor physiotherapy practice.

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