The Evidence Base for a new approach to Potty Training

Authored by Rebecca Mottram,
children's nurse and potty training expert
Visit Little Bunny Bear for more information

This document provides a summary of some of the key research into potty training. Using the research evidence to inform recommendations means that the advice is objective and in line with child development theory and practice. It also means that the advice is peer reviewed and up-to-date, helping you to make informed decisions about the care of any children you look after.

While the summary provides an overview of the latest research on potty training, please be aware that there have been a limited number of studies undertaken on this topic. Scientific research is complex, and individual studies often have limitations. Our recommendations are based on the best available evidence, and as this body of evidence grows so our recommendations may adapt.

Contents

Bowel and bladder health

1. Li, X., Wen, J.G., Xie, H., Wu. X,D,, Shen. T., Yang, X.Q., Wang, X.Z., Chen, G.X., Yang, M.F., Du, Y.K. (2020). *Delayed in toilet training association with pediatric lower urinary tract dysfunction: A systematic review and meta-analysis.* Journal Pediatric Urology. 16.3:352.e1-352

This study aimed to understand the association between the age at which toilet training begins, the methods used, and the risk of developing lower urinary tract (LUT) dysfunction in children. Data on 24,121 children aged 5-17 were included. The study found that starting toilet training before 24 months is optimal. **Initiating toilet training after 24 months may lead to a higher prevalence of LUT dysfunction.**

2. Hanna Albaramki J, Awad Allawama M, Fahme Yousef A. (2017) *Toilet Training and Influencing Factors that Affect Initiation and Duration of Training: A Cross Sectional Study.* Iran J Pediatr. 27(3):e9656.

Mothers of 1,257 children attending paediatric clinics at Jordan University Hospital were interviewed. Constipation and stool toileting refusal was present in 15.4% and 15.1% of children respectively, and **there was a significant association between constipation and older age of starting toilet training**.

3. Duong, T.H., Jansson, U.B., Holmdahl, G., Sillen, U. and Hellstrom A.L (2010). *Development of bladder control during the first year of life for children who are potty trained early*: Journal of Pediatric Urology 6(5):501-505

This study sought to investigate bladder development in children who were potty trained before six months of age. The study revealed that **children who were potty trained before six months had significantly larger bladder capacities and maximum voided volumes than their peers who began after that date.** Furthermore, there was no difference in volume at first desire to void between the two groups. Thus, early potty training did not adversely affect bladder development in children, rather it may even have had a beneficial effect.

4. Barone, J et al. (2009). *Later toilet training is associated with urge incontinence in children.* J. Pediatric Urology (5) 458-461.

This study was a retrospective chart review of children with urge incontinence (a sudden need to go to the toilet which often results in an accident), and compared the age of toilet training between those with and without incontinence. Results revealed that **children with urge incontinence were significantly older when they achieved daytime continence than the control group.**

5. Nathan J. Blum, Bruce Taubman, Nicole Nemeth (2004) *Why is toilet training occurring at older ages? A study of factors associated with later training.* The Journal of Pediatrics, Volume 145, Issue 1, pp107-111.

406 children between the ages of 17 and 19 months were enrolled in this study. Parents conducted an initial questionnaire and follow-up interviews were undertaken every 2 or 3 months until children completed daytime toilet training. **3 factors were consistently associated with later training: initiation of toilet training at an older age, presence of stool toileting refusal, and presence of frequent constipation.**

6. Bakker, E et al. (2002). *Results of a questionnaire evaluating the effects of different methods of toilet training on achieving bladder control.* BJU International 90 456-461.

This study used a retrospective questionnaire distributed to 4,332 parents. Children with urinary tract symptoms reported more 'below average' school results and less independence in homework and hygiene, and were toilet trained significantly later with significantly less use of scheduled voiding. The reaction of the parents when the attempt at voiding was unsuccessful was significantly different. The researchers concluded that **postponing the onset of the training after 18 months of age and using certain methods to provoke voiding (asking to push, opening the water tap) probably increases the risk of later problems with bladder control.**

7. Hellstrom et al. (2001) *Early potty training is beneficial in bladder dysfunction: Decreases the risk of urinary tract infection.* Lakartidningen 111(1), 98 (28-29): 3216-9

The authors studies that suggest **delayed toilet training may contribute to bladder dysfunction and urinary tract infections by increasing the likelihood of incomplete emptying of the bladder and bacterial colonisation in the urinary tract.** The authors

speculate that early toilet training may improve bladder function and lower the risk of urinary tract infections in children. They urge healthcare professionals to consider these potential advantages of early potty training for children in reducing their likelihood of bladder dysfunction and UTIs.

Start early, finish early

1. Duong, T.H., Jansson, U.B., Holmdahl, G., Sillen, U. and Hellstrom A.L (2013) *Investigating Urinary Bladder Control During the First Three Years of Life in Healthy Vietnamese Children Compared to Swedish Children: A Pilot Study* Journal Pediatric Urology 9(6):700-6

This study sought to compare the urinary bladder control development of healthy Vietnamese and Swedish children during their first three years of life. A total of 332 Vietnamese and 214 Swedish children were included in the analysis. Researchers discovered that **Vietnamese children demonstrated more bladder control than Swedish children at 12 months, with 70% of Vietnamese being continent compared to 25% among Swedish youngsters.** Furthermore, Vietnamese children had a higher frequency of voiding and smaller maximum volumes than their Swedish counterparts. This study suggests that differences in toilet training practices and cultural factors may account for the observed differences in bladder control development between these populations.

2. Shai-Dei Yang, S. et al. (2011). *Early Initiation of Toilet Training for urine was associated with early urinary continence and does not appear to be associated with bladder dysfunction.* Neurology and Urodynamics. (30) 12523-1257.

This study involved 318 healthy kindergarten-age children. Parents filled out a questionnaire about when they started toilet training their child, how long it took, and their child's current ability to stay dry during the day and night. They also provided information on their child's bowel movements. Each child had their bladder function tested. **Children who started nighttime toilet training before 30 months were more likely to stay dry at night sooner and had fewer bedwetting incidents.** Starting toilet training early did not negatively affect the bladder's function.

3. Benjasuwantep, B. and Ruangdaraganon, N. (2011). *Infant toilet training in Thailand: Beginning and Completion Age and Factors Influencing It* Journal Medical Association Thai 94(6):1441-6

This study sought to determine the starting and completion age of infant toilet training in Thailand, as well as any factors associated with it. Data were collected through a structured questionnaire answered by 371 parents of healthy children aged 6 months to 2 years; **results showed an average starting age for toilet training was 8.6 months, while its average completion age was 1.9 years**. Female gender, having siblings, and higher maternal educational levels were all linked with earlier toilet training completion rates.

4. Joinson, C., Heron, J., Von Gontard A. et al. (2009). *A prospective study of age at toilet training and subsequent daytime bladder control among school-age children:* Journal Developmental Behaviour Pediatrics 30(3): 385-93

Researchers conducted a prospective study to explore the relationship between the age of initiation of toilet training and subsequent daytime bladder control among school-age children. This study followed a large group of children from birth to seven years old, collecting data through parent questionnaires. Results revealed that **children who were toilet trained before the age of two years had a greater probability of attaining daytime bladder control by five compared to those trained later.** The authors suggest that early toilet training may aid in the development of bladder control and reduce the likelihood of urinary incontinence later in childhood.

5. Rugolotto, S., Sun, M., Boucke, L., Calo, D.G. and Tato L. (2008). *Toilet training started during the first year of life: Report on elimination signals, stool toileting refusal and completion age.* Minerva Pediatrics 60(1):27e35

This study sought to determine the effectiveness of starting toilet training before one year old by observing elimination signals, stool toileting refusal, and completion age. Researchers conducted a survey with 237 parents. Mean completion ages for daytime dryness and bowel control were 17.4 and 15.0 months, respectively; **those who initiated toilet training during the first 6 months completed training earlier than those who started later.**

Signs of readiness

1. Kaerts, N., Van Hal, G., Vermandel, A. and Wyndaele J.J. (2012) *Review of Readiness Signs Used to Define Appropriate Moment to Start Toilet Training: A Literature Review* Neurourol Urodyn 31(4): 437-40

This review article examined various readiness signs that are commonly used in determining when children are ready to begin toilet training. These factors include physical and cognitive abilities such as control over bowel and bladder movements, communication ability when needing the bathroom, and motivation to use it independently. **The authors point out the lack of consensus in the literature regarding which readiness signs are most crucial and how to use them** when determining when and how toilet training should begin. Cultural and societal influences may also play a role in determining when and how toilet training begins.

2. Taubman B, Blum NJ and Nemeth N. (2003) *Children who hide while defecating before they have completed toilet training: a prospective study*. Arch Pediatr Adolesc Med. Dec;157(12):1190-2.

This study looked at the relationship between children who hid to defecate prior to completing toilet training and the incidence of issues such as constipation, as well as the age at which training was completed. The nonhiders were significantly less likely to have stool toileting refusal, frequent constipation, or stool withholding. **Nonhiders also completed toilet training at an earlier age than the hiders, indicating that hiding as a "sign of readiness" to initiate training is not evidence-based.**

3. deVries MW and deVries MR. (1977). *Cultural relativity of toilet training readiness: A perspective from East Africa.* Pediatrics. 60: 170-177.

This paper explores the cultural variations in toilet training practices throughout East Africa, and how these practices relate to the concept of "readiness". The authors report that in East African cultures studied, children are typically toilet trained much earlier than Western cultures; some are even taught as young as 3 to 6 months of age. The authors contend that **the concept of "readiness" for toilet training is heavily influenced by cultural norms and beliefs**, making it impossible to apply universally.

Disposable nappies

1. Li X, Wen JG, Shen T, Yang XQ, Peng SX, Wang XZ, Xie H, Wu XD and Du YK (2020) *Disposable diaper overuse is associated with primary enuresis in children*. Sci Rep. Sep 1;10(1):14407.

This study looked at the relationship between disposable nappy use and bedwetting. Researchers conducted a survey of 4,805 children aged 5-15 years in China to collect data on nappy usage, toilet training and bedwetting. Results showed that **using disposable nappies beyond 21 months of age was significantly linked to an increased risk of bedwetting**. The authors speculated that bedwetting may be due to years of sleeping with disposable nappies, which conditions the brain to ignore the bladder.

2. Wang XZ, Wen YB, Shang XP, Wang YH, Li YW, Li TF, Li SL, Yang J, Liu YJ, Lou XP, Zhou W, Li X, Zhang JJ, Song CP, Jorgensen CS, Rittig S, Bauer S, Mosiello G, Wang QW, Wen JG. (2019). *The influence of delay elimination communication on the prevalence of primary nocturnal enuresis-a survey from Mainland China*. Neurourol Urodyn. 38(5):1423-1429.

This study explored whether increased prevalence of bedwetting in Mainland China is linked to delays in elimination communication (EC), a form of toilet training practised at a young age. Researchers distributed 19,500 questionnaires to parents across five provinces. Results showed children who began EC before 6 months had a lower bedwetting rate compared to those starting after 12 months. **Longer use of disposable nappies and later EC commencement were associated with higher bedwetting rates**.

For more support with potty training, take a look at these evidence-based guides, and/or get in touch with Rebecca rebecca@littlebunnybear.com

For information on introducing an evidence-based toilet training programme in your setting, contact Elisabeth elisabeth@sprout-innovation.co.uk