



## TOILET TRAINING

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### WHAT IS TOILET TRAINING?

This term defines a very delicate moment in the life of a child in which he learns to pass urine (urination) and stools (defecation) in a potty or acceptable recipients/locations.

Some Authors also use the term of education to sphincters' control, both for passing urine and stools.

### WHAT ARE THE SPHINCTERS AND WHEN DO THEY BECOME ABLE TO CONTROL?

Sphincters are ring-shaped muscles which are around the anus, their contraction causes its closure.

Defecation includes the relaxation of the internal anal sphincter, the external anal sphincter (voluntary), and of the pubo-rectal muscle. The action of the so-called "abdominal press" (contraction of the muscles of the wall of the abdomen) determines the elimination of stools. Squatting/sitting considerably facilitate the action of these muscles. Urination takes place with the contraction of the detrusor muscle of the bladder and the relaxation of the sphincters of the base of the bladder and of the urethra. It has been reported that "complete control" of the sphincters starts generally between 18 months and 2 years, the age when the child learns to control, on his own will, the bladder and the bowel. Bowel control is more difficult because the child needs to recognize the stimulus, and at the same time, he must learn to relax the muscles of the anus and to contract the abdominal muscles, in order to help the bowel movements (peristalsis) which eventually ends up with elimination. However, this capability doesn't develop in all children at the same age, because it is conditioned by the level of maturation of the nervous system and by the provided toilet training method.

### HOW IS TOILET TRAINING PRACTICED TODAY?

Currently, according to the available international guidelines, the majority of pediatricians recommend to start independent toilet training at 18-24 months of age. This recommendation is based on the guidelines of the American Academy of Pediatrics, which refer to some studies made by Dr Brazelton in 1962. According to this Author, an early start of toilet training is not recommended, in order to avoid possible failures that may have negative consequences on the child's self-esteem or that of parent's self-esteem. For this reason, it is recommended to wait until the child shows that he is ready to start toilet training and is aware of urination's and defecation's stimuli, although there is no scientific evidence of side effects associated to an early start of toilet training. Today independent toilet training is practiced by the majority of people and the signs which tell us that the child is ready to start are as follows: the ability to walk up to the potty, to remain dry a few hours, to sit confidently on the potty, and to be able to communicate his own needs. As a matter of fact, parents' practical benefits prevail over the child's real needs and independent toilet training is even more delayed, with the result that, not rarely, children of three or older still wear a diaper all day long. Recent clinical studies have shown an increase in the pattern of constipation and enuresis in children, and some experts see a connection between these problems and the late start of toilet training.



## WHAT IS ASSISTED INFANT TOILET TRAINING?

Grossly speaking, potty training methods are divided into early (beginning within the first few months of age) and late ones (beginning after 18 months), or independent (usually with a late start), and assisted ones (usually with an early start). The independent toilet training waits for the child to show that he is ready to be potty-trained and teaches to eliminate in certain places only, to open and close the door of the bathroom, to undress and maintain an appropriate posture, to evacuate and use the necessary sanitary aids, to dress himself, to flush the toilet, to open and close the door. Conversely, the assisted toilet training teaches the mother or the caregiver to recognize the signs which herald the process of elimination. When the signs are detected, the caregiver helps the child to eliminate in a comfortable and appropriate position. In April 2004, Dr. Sun and I published a study entitled "Assisted infant toilet training in a western family setting" in the "Journal of Developmental and Behavioral Pediatrics". We have shown how to integrate independent (which starts after 18 months of age) and early assisted toilet training (which starts before 18 months of age). This integration helped very much the child to achieve toilet training completion without side effects. With early assisted toilet training the parents can help the child in the process of urination and defecation from the first months of life. The child will gradually learn how to use the potty, and the independent learning process, at about 2 years of age, will be less traumatic and much more efficient. In addition, our study shows that the sphincters of the infant are much more working and functioning than we commonly believe. Contrary to what is commonly thought, it does exist a sphincter involuntary control in the infant, which leads him/her to urinate and defecate several times a day, but not continuously. Scientific studies on assisted toilet training are not common. In 2008, we published a retrospective study where we examined an international population of mostly middle-class children who started toilet training in the first year of life. Data were collected from 286 self-reported anonymous questionnaires and these were our main findings: over 90% of the respondents reported that their children showed elimination signals; stool and urinary toileting refusal was only nearly 12%; for those who completed toilet training at the time of survey completion, 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; those who showed stool toileting refusal at the beginning of training completed bowel training later than those who did not ( $P < .001$ ); those who exhibited elimination signals for voiding or bowel movements completed day-dryness and bowel training earlier than those who did not ( $P < .001$ ). Notable side effects were not observed.

## HOW DOES ASSISTED INFANT TOILET TRAINING WORK?

From the second month of life, the mother should begin to observe the types of crying and the facial expressions that can anticipate his/her need to defecate or urinate. In the case of defecation or urination, crying is usually lower in tone and lasts less; it is interrupted after the elimination and it is very different from crying caused by hunger. This crying is more in relation to a state of discomfort. During the defecation process, the face sometimes becomes red, however every child is unique and signs might differ. For example, there are children who do not show any signs before the elimination. In this situation, the daily schedule of elimination, the relationship with meals and other forms of behavior may help the caregiver. Moreover, in the first months of life, the elimination takes place usually right after feeding, urination upon awakening, or some minutes or hours after the bladder has been filled. The combination of these patterns can help the caregiver to understand the basic needs of the child. During the first months, the high number



of eliminations during a day may make this task difficult. For this reason, the caregiver must not be discouraged if at times he/she is not able to pick up the “signs” linked to the elimination need.

This is how it happens in practice: from 2-3 months of age, the caregiver starts observing the child attentively, in order to pick up the signs (type of crying, elimination schedule, particular associated behaviors, and connection with mealtime) which may herald the need to eliminate. After a few days of observation, in the presence of these signs, the child can be taken to the toilet. The unweaned child will be held in the arms of an adult, his back leant against the adult’s chest with his legs open over a basin, which has been previously placed in the sink, in order to make him more comfortable. This position will be maintained for some minutes while waiting for the discharge or passing urine. From 7-8 months of age when the baby is able to sit alone or with support, he will be sat on a potty. In this way, a more natural and physiologic position is obtained, so that the baby can push easily. From this age, the baby may be able to associate this position “of sitting” with the act of elimination and will unlikely refuse the potty. Actually, when he will start speaking, he will ask to eliminate himself.

#### FOR WHOM DOES ASSISTED INFANT TOILET TRAINING METHOD SUIT?

In general, any child may undertake assisted toilet training. The caregiver plays the most important role. As a matter of fact, during the first year, it is necessary to spend more time to observe and take care of the baby’s basic needs. The caregiver has to be strongly motivated in spending time on take care of baby’s basic needs from the months of age. For this reason, this method is suited to all children, but it can not be proposed to all mothers. Experienced grandparents or babysitters familiar with this method might help as well.

#### COULD ASSISTED INFANT TOILET TRAINING IMPROVE MOTHER-CHILD RELATIONSHIP?

Yes, this relationship can be improved, because the mother will be able to better understand some of the reasons of her baby’s cry. For example, in occasion of waking up at night to urinate, which might happen some hours after drinking some milk before going to bed, the baby will not be given a pacifier or more milk but he will be helped to pass urine, so he will go back to sleep more easily. If he won’t be taken to the toilet, he will pass urine in his diaper in a less comfortable position, and then he will need to be changed because sleeping in a wet diaper will only increase an uncomfortable feeling. The mother will be able to better understand some of the reasons of her baby’s cry and will give appropriate answers to the basic needs of her child. Moreover, the transition to the independent toilet training will take place more smoothly.

#### HYSTORICAL PERSPECTIVE OF ASSISTED INFANT TOILET TRAINING ACCORDING TO THE MEDICAL LITERATURE

Today, we are still missing a strong evidence that supports the late start of toilet training which has been decided in the 60s by TB Brazelton. About this issue it is useful the reading of “Christophersen ER. The case for evidence-based toilet training. Arch Pediatr Adolesc Med 2003;157:1153–4.” Assisted Infant Toilet Training (AITT) is a method still practiced in China, India, Africa, Central and South America, but also in North America (USA and Canada), and in some European countries (England, Austria, Italy, The Netherlands and Germany). AITT has been practiced for centuries, and generations of humans, before the 60s when the so called “*Independent Toilet Training*”, or “*Child Oriented Approach*”<sup>5</sup> started. Let’s discuss the data available in the medical literature, in order to have a wider view on Assisted Infant Toilet Training which is practiced since the very first few weeks of age.



In 1971, Thomas Ball, a US paediatric psychologist, publishes a case report of 4 brothers toilet trained since the first few months of age<sup>3</sup>. Three interesting comments are possible on this article. The first one is about the completion of toilet training: the children accomplish it before they can walk. The second one is about the relationship mother/child: the mother assist her children in occasion of bowel movements or urinations following heralding signs/signals given by the children. The mother is guided by her child, and heralding signs/signals of the child are reinforced by maternal assistance. The third one is about one of these children who was affected by Down Syndrome: this child also is trained according to AITT with the same results.

In 1977, Marten W. deVries, Professor of Social Psychiatry at Maastricht University (The Netherlands publishes on Pediatrics<sup>7</sup> an observational study of an African tribe where toilet training was started immediately after birth; it occurred during day and night and the “so called” sphincter control was reached at 6 months of age. The mother had two different positions to assist her child during bowel movement and urination, along with two different associated sounds. Assistance was again provided when she noticed heralding sign/signals given by the child. According to the Author the alkaline terrain, the simple ways of living of this tribe, and the help given to the mother by other members of the family (among whom daughters of 8 years of age or so) could provide some success to the method. The Author concluded that this method could not be offered for some reasons to our western society. It is interesting to note that this is the first time that in the literature is introduced the term of “cultural relativity” about toilet training. As a matter of fact, it is thought that toilet training has a late start in the western population not because neuro-anatomy and neuro-physiology are completed later than other ethnical groups, but because according to a cultural and sociologic point of view it is better to wait for two years of age (TB Brazelton, personal communication). About this issue, I would like to recall that one of the reasons to start late toilet training was the waiting for the complete myelinization of pyramidal tracts<sup>1,5,6</sup>.

In 1978, deVries’s study is commented by two letters which confirm that this toilet training method was practiced in Giamaica<sup>10</sup> and in India<sup>17</sup> too. The method was similar.

In 1985, Smeets et al<sup>26</sup> publish a controlled prospective study which took place at the Association “Medaglie d’oro” in Modena (Italy). Four Italian infants started toilet train during the first month of age. The operators (parents but also researchers’ assistants), trained the infants to reach a potty placed at a farer and farer visual range. In particular, potties were placed in many rooms and all the infants’ attempts to reach potties in occasion of bowel movements or urination, or in occasion of heralding signs, were reinforced. During the first year of life, gradually, the infants were potty trained. In occasion of “mistakes”, the potty was put closer to the view of the infant and toilet training started again. In this study also, the average age of “sphincter control” occurred beyond one year of age without side effects; all infants succeeded in toilet training program.

In 1991, AITT is described in Cambogia<sup>18</sup>.

In 2004, we publish the case of an Italian infant who was toilet training according to the AITT in a regular western family, with the use of regular diapers.<sup>27</sup> AITT started at 33 days of life, bowel “control” occurred at 5 months of age. Follow-up at 13 years of age is without side effects.

No matter where the method is practiced, AITT is always based on heralding signs of bowel movements and urination (e.g. signs of pushing, discomfort, crying, child pointing to the pubic area, gas passing, redness on face, different facial expressions), on timing of eliminations (e.g. after wake up or meals), on a correct



assistance during urination or bowel movements, accompanied by sounds (like “shhhhh”). Prizes and encouragements are given in case of success, no punishment in case of mistake. Favourable positions are maintained, for example with both legs flexed on the abdomen, avoiding that eliminations occur in an flat position into a diaper. Therefore mother/child relationship is strengthened, while offering adequate answers to specific needs of the child. Thus it is a different concept of “sphincter control”, it is a sort of assistance given to the infant/child when he is not able to verbally communicate his basic needs. Traditional independent toilet training will happen after 18 months of age as usual.

The features of the method previously described, have been documented in a retrospective study we have recently published<sup>22</sup>. We have examined children of middle class who started toilet training during the first year of life. We collected data through 286 anonymous questionnaires completed mainly by parents: more than 90% of parents declared that their children did show heralding signs in occasion of bowel movements or urination; *stool toileting refusal* counted for 12% (in independent toilet training it counts 25%). For those who completed toilet training at the time of questionnaire completion, average age of control of daily urination and bowel movement was respectively 17.4 and 15.0 months. Those who started toilet training during the first 6 months of life completed toilet training earlier than those who started later. Those who showed *stool toileting refusal* at the beginning of toilet training, completed toilet training later than those who did not show it ( $P < .001$ ). Those who showed heralding signs did have a daily control of urination and bowel movement earlier than those who did not show them ( $P < .001$ ). No side effects have been reported.

We have recently thoroughly studied also the so called *elimination signals*<sup>28</sup> with data from the previous questionnaire which were not analyzed yet. These are the main elimination signals which heralded urination and the percentages of children showing them: facial expressions 54%, vocal signals 50%, pointing to the pubic area 49%, pushing 36%, other signals 28%. In 39% of the cases one elimination signal only was present, in 61% at least two of them. These are the main elimination signals which heralded bowel movement and the percentages of children showing them: pushing 66%; facial expressions 61%, gas passing 57%; vocal signals 44%, pointing to the pubic area 38%, other signals 18%. In 25% of the cases was present one sign only, in 75% at least two of them.

We have then studied 84 children in a prospective study (data non published yet, but analyzed by three students with three thesis at the University of Statistics in Bologna). These children started toilet training during the first three months of age and their parents answered 20 questions of a questionnaire. Data have been collected through telephone calls every 3 months, so that the children could be followed closely and the information was the best available and not 1-2 years old. Toilet training over night has a strong impact on the success of the method. Moreover those who show elimination signals for urination, have a probability to remain dry over night (and by the way to complete toilet training) 3 times higher compared to those who do not show.

Recently more literature has been published and has confirmed that AITT is practiced in many countries<sup>8,9</sup>, and also that is without any side effects, if it is performed according to a normal parents/children relationship, that is without punishments or constrictions. We think that it may be proposed as a toilet training method for some children and for some parents, which could help to stop the progressive delay about the beginning of toilet training, which is set often after 2 years of age, and therefore increasing the likelihood of enuresis and stipsis.



Finally, we would like to write down here the available literature: starting toilet training during first few weeks of age is no longer a fact belonging to “the other world”.

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## BIBLIOGRAFIA

1. American Academy of Pediatrics. Toilet training guidelines. *Pediatrics* 1999, 103:1362-68
2. Bakker E, van Gool JD, van Sprundel M, van der Auwera C, Wyndaele JJ. Results of a questionnaire evaluating the effects of different methods of toilet training on achieving bladder control. *Br J Urol Int* 2002;90:456-461
3. Bakker E, Wyndaele JJ Changes in the toilet training of children during the last 60 years: the cause of an increase in lower urinary tract dysfunction?, *Br J Urol Int*. 2000;86(3):248-252.
4. Ball TS, Toilet training an infant mongoloid at the breast, *California Mental Health Research Digest*, 9, 80, 1971.
5. Brazelton TB. A child-oriented approach to toilet training. *Pediatrics* 1962; 29:121–128.
6. Brazelton TB, Christophersen ER, Frauman AC, et al. Instruction, timeliness, and medical influences affecting toilet training. *Pediatrics* 1999 Jun;103 Suppl 6:1353–1358.
7. deVries MW and deVries MR., Cultural relativity of toilet training readiness: a perspective from East Africa, *Pediatrics* 1977,60:170-177.
8. Duong TH, Jansson UB, Hellström AL. Vietnamese mothers' experiences with potty training procedure for children from birth to 2 years of age. *J Pediatr Urol*. 2013;9(6 Pt A):808-14.
9. Duong TH, Jansson UB, Holmdahl G, Sillén U, Hellstrom AL. Development of bladder control in the first year of life in children who are potty trained early. *J Pediatr Urol*. 2010;6(5):501-5.
10. Gersh MJ. Early toilet training. *Pediatrics* 1978; 61: 674 (letter)
11. Jordan G Elimination communication as colic therapy. *Medical hypothesis* 2014;83:282-285
12. Gladh G, Persson D, Mattsson S, et al. Voiding patterns in healthy newborns. *Neurorol Urodynam* 2000;19:177-184
13. Goeller MH, Ziegler EE, Fomon SJ. Voiding during the first three years of life. *Nephron* 1981;28:174-178.
14. Hellstrom AL. Influence of potting training habits on dysfunctional bladder in children. Review. *Lancet* 2000;356:1787.
15. Jansson UB, Hanson M, Sillen U, Hellstrom AL. Voiding pattern and acquisition of bladder control from birth to age 6 years-a longitudinal study. *J Urol* 2005;174:289-293.
16. Leavitt LA. Mothers' sensitivity to infant signals. *Pediatrics* 1998;102:1247–1249
17. Ravindranathan S. On toilet training. *Pediatrics* 1978;61:674 (letter)
18. [Richards CG](#). Ready, steady, hiss. *Arch Dis Child*. 1991;66(1):172
19. Rugolotto S, Ball TS, Boucke L, Sun M, deVries MW. A surging new interest in toilet training started during the first months of age in Western countries. *Techniques in Coloproctology*, 2007;11(2):162-3
20. Rugolotto S, Educazione assistita precoce al vasino, *Bollettino SIGENP* agosto 2005.
21. Rugolotto S, Monsorno M, Ball T, Boucke L, Chen BB, deVries M, Sun M, Tatò L. Nuove prospettive di educazione al vasino. *Doctor Pediatria* Dicembre 2007.
22. Rugolotto S, Sun M, Boucke L, Calò DG, Tatò L. Toilet training started during the first year of life: a report on elimination signals, stool toileting refusal and completion age. *Minerva Pediatr*. 2008;60(1):27-35.
23. Rugolotto S, Sun M, Boucke L, Chen BB, Tatò L. Assisted infant toilet training: is it time for a critical revision? *Pediatr Med Chir*. 2008;30(5):233-8.
24. Rugolotto S, Sun M. Toilet training. *Pediatrics*. 2004;113(1 Pt 1):180-1; author reply 180-1.
25. Sillén U. Bladder function in healthy neonates and its development during infancy. *J Urol*. 2001;166(6):2376-81.



26. Smeets PM, Lancioni GE, Ball TS, Oliva DS., Shaping self-initiated toileting in infants, *J Appl Behav Anal.* 1985.
27. Sun M, Rugolotto S., Assisted infant toilet training in a Western family setting, *J Dev Behav Pediatr* 25:1–3, 2004
28. Sun M, Rugolotto S, Boucke L, Tatò L. Elimination Signals and Assisted Infant Toilet Training, poster presentato in Honolulu (USA), Pediatric Academic Societies Annual Meeting, maggio 2008
29. Tali S, Efrat SU, Boucke L, Rugolotto S. Infant toilet training. *J Pediatr (Rio J)*. 2009;85(1):87-8; author reply 88-9.
30. Tarbox RS, Williams LW, Friman PC. Extended diaper wearing: effects on continence in and out of the diaper. *J Appl Behav Anal* 2004;37:97–100
31. Yeung CK, Godley ML, HO CKW, et al. Some new insights into bladder function in infancy. *Br J Urol* 1985;76:235-240.

On behalf of the International Board for the Study, Research and Promotion of Assisted Infant Toilet Training, <http://lucybike.byethost4.com/aitt/index.php>.