

Birth preparation courses by midwives or physiotherapists are regularly attended by a large number of pregnant women from the 24th week of gestation on. They serve above all to mentally prepare primiparae for the oncoming birth, to develop an understanding of the phases of delivery and birth mechanism and to learn breathing and relaxing exercises. In particular primiparae have difficulty in imagining what the parturition phase and the pressing period will be like and fear the pain associated with the penetration of the baby's head.

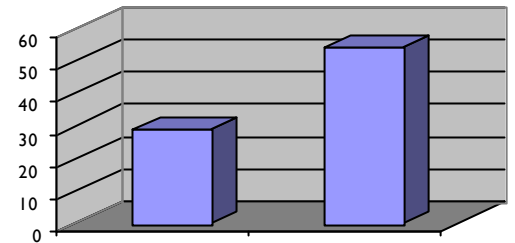
The Birth Trainer presented here was developed as a possibility to gradually adapt the vagina and perineum to greater penetration volumes and to train a feeling for sufficient pressing.

This study intends to investigate to what extent it is possible to influence the birth process positively with the help of this training device and to additionally prevent perineal injuries.

In a prospective and single blinded pilot study 80 pregnant women (50 primiparae and 30 pluriparae) were examined as against a control group with comparable baby's head circumference and birth weight (patients who did not perform the training) with regard to perineal injuries and the birth process itself.

The Birth Trainer EPI+NO® (fig. 2) consists of a pumpable conical balloon which is connected to a manometer via an approx. 70 cm long tube. From the 38th week of pregnancy on it is fed into the vagina by the pregnant women once per day and gently and gradually pumped up to a maximum diameter of 10 cm. After 15 to 20 min the balloon is pressed out by the pregnant women, whereby the threshold of pain must not be exceeded under any circumstances. (fig. 1).

In a special patient's protocol the balloon size, pressing capacity, anxiety of birth and technical problems are documented daily.



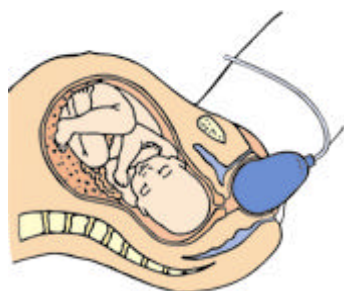
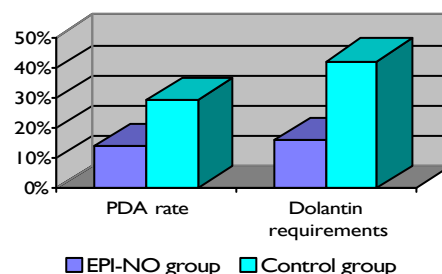
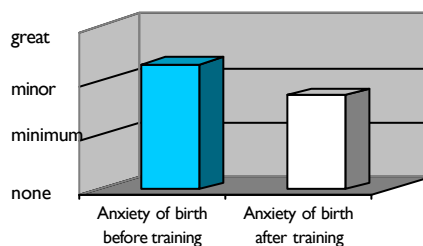
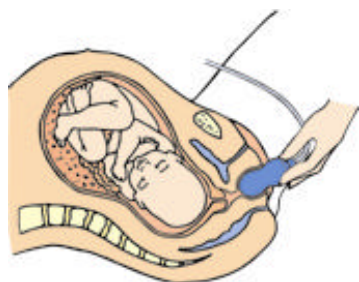
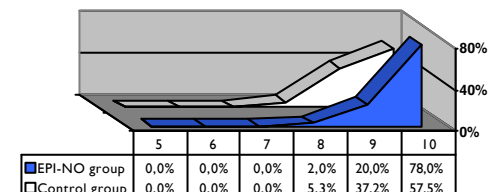
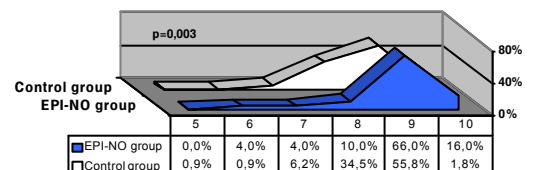
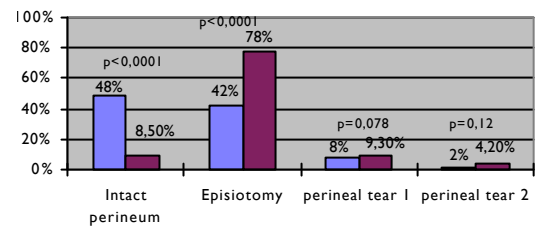
In the subjective assessment of anxiety of birth (great fear = 4; no fear = 1) a significant reduction of this fear ($p < 0.001$) was registered within the course of training (fig. 3).

In the group of pregnant women taking part in delivery training with the birth trainer the analgesics requirements (PDA-rate: $p = 0.038$; Dolantin: $p = 0.01$) were significantly below the analgesic required by the control group (fig. 4).

The parturition phase within the training group lasting an average of 28.8 min was significantly lower than in the control group with an average of 53.7 min ($p = 0.014$) (fig. 5).

In the group of primiparae it was possible to significantly reduce the episiotomy rate from 78% in the control collective to 42%, without observing any major increase in other labor injuries (perineal tears, degrees I-III). In 48% of the spontaneous deliveries primiparae of the training group experienced delivery with „intact perineum“, whereas in the control collective only 8.5 % of the spontaneous delivery were without episiotomy or perineal tear ($p < 0.0001$) (Fig. 6).

In comparing the Apgar scores significantly higher rates were achieved after 1 and 5 minutes in the training group than in the control group (1-min-Apgar: $p = 0.003$; 5-min-Apgar: $p = 0.011$; 10-min-Apgar: not significant.) (fig. 7).



By daily training with the Birth Trainer EPI+NO® it is possible to reduce the anxiety of birth significantly. By reducing anxiety of birth it is also possible to shorten the parturition period as well as the analgesics requirements. This may be explained by the fact that the inhibition of uterine contractions within the scope of birth anxiety is prevented on the grounds of the β -adrenergic effect. A shorter parturition period means less stress for the foetus and therefore leads to more favourable „Outcome Parameters“ e.g. the Apgar Score. By a slower, more gentle mechanical pre-expansion of vulva and vagina regulated by the woman herself, it has been possible to reduce injuries to the vulva as well as vagina significantly and simultaneously positively influence the birth itself positively, in addition to the situation of the foetus.

Moreover there can also be expected a reduction in microlesions which play a considerable role in later micro-trauma of the pelvis muscles can also be expected.