# Does the Logan Basic Protocol for chiropractic care during pregnancy reduce labor time and increase the ease of labor and childbirth?

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**Abstract**

**Objective** This was a pilot study designed to determine the feasibility of using the study design to analyze the effect of the Logan Basic Technique adjusting protocol on the length and ease of labor for Logan students and student family.

**Methods** Forty-six Logan students and student family volunteers participated in this study. Subjects underwent a pre-study interview to determine eligibility to enter the study based on criteria set by the investigators to ensure that the women had uncomplicated pregnancies and were expecting an uncomplicated labor and delivery. Subjects were then adjusted one time per week starting from 20-24 weeks gestation until delivery following the Logan Basic Technique protocol for adjusting pregnant women. The outcome measures were labor time and subjective ratings of the labor and delivery ease provided by the study subject and her birth attendant. The ratings were then compared to standard obstetric literature.

**Results** The results of this pilot study demonstrated that there is a trend towards having a shorter and easier labor for women who were treated with this adjusting protocol with the highest benefit shown when not complicated by medical intervention. A majority of the subjects subjectively reported an overall positive birth experience and had uncomplicated vaginal deliveries according to their birth attendant.

**Conclusions** According to the results of this study, chiropractic care during pregnancy is beneficial to the labor and delivery process. The nulliparous deliveries, although within normal values, show a decrease of 6.56 hours and 4.84 hours from the upper limits of medical literature. The multiparous, also, prove these findings with 1.87 hours from the lower limits and 7.17 hours decrease from the upper limits. The use of chiropractic treatment during pregnancy is proven to prepare mothers-to-be during pregnancy to assist in the easing of delivery and decrease of labor time by balancing the pelvis and preparing the pelvic floor. The perception of this study is that Logan Basic Technique has the best effect on the ease and time of labor when not associated with outside medical intervention and allowing the body to labor naturally.

**Key words** Pregnancy, Chiropractic, Logan Basic Technique, Webster Technique, Perineal contact.

## Introduction

The scientific literature on pregnancy and labor times is well documented in the obstetric field, but similar studies are sparse in chiropractic literature. In a previous senior research project at Logan College of Chiropractic, the investigators used a survey to assess the differences in labor time between women who received chiropractic care during pregnancy and the labor time reported in the obstetric literature (1). In this study, we would like to determine if the Logan Basic Protocol for chiropractic care during pregnancy can reduce labor time over the currently published obstetric literature and if the ease of labor is improved with the technique. It is assumed that the majority of the women who are reported in the obstetric literature have not received chiropractic care during their pregnancy since only about 11% of the United States population currently uses chiropractic, therefore, that data will be used as our control data.

Obstetric literature defines labor as a coordinated effective sequence of involuntary uterine contractions resulting in thinning and dilation of the cervix and voluntary bearing down efforts of the mother, which results in the birth of the baby (2). Labor is divided into three stages. The first stage begins with the onset of contractions and ends with complete dilation of the cervix (10cm). It is typically the longest stage of labor. It can be further divided into a latent and active phase. The latent phase is slow dilation of the cervix up to 3-4cm and the active phase is rapid dilation to 10cm. The second stage of labor involves the descent and delivery of the baby. It is commonly known as the pushing stage. The third stage of labor is the delivery of the placenta.

The first stage of labor is expected to last anywhere from 8-12 hours in a first pregnancy (2). The latent phase can last 6-8 hours and the active phase 4-5 hours (3). Multiparous women can expect their labor and delivery to be short with the first stage lasting 6-8 hours (2). The latent phase lasts 4.5-5 hours and the active phase lasts 2-2.5 hours (3). The second stage of labor can last anywhere from a few minutes to several hours, but is not expected to last more than two hours (1). This is for labor and deliveries that are considered normal. Labors that have complications are considered separately.

In the literature there is no standard way that the onset of labor is measured. One study defined the onset of the first stage of labor as when "regular, painful contractions that led to cervical change began occurring every 3-5 minutes" (4). Other studies were less specific, defining labor as the onset of regular contractions (5). Another study used "painful contractions

accompanied by effacement (thinning of the cervix) of at least 80 percent" as well as bloody show (vaginal discharge), or spontaneous rupture of the membranes (6). In Williams Obstetrics 22nd edition they state that there are two methods of defining the start of labor. The first is "the clock time when painful contractions become regular (7)." The second method is to define the onset of labor as the time of admission to the birth center or hospital (7). In the United States, admission for labor is usually based upon cervical dilation accompanied by painful contractions. Dilation of 3-4 cm is considered to be a reliable minimum for diagnosis of labor in a woman with intact membranes. Kilpatrick and Laros who studied the characteristics of normal labor defined labor onset as "the time when a woman recalled regular, painful contractions every 3 to 5 minutes that led to cervical change (8)." In this study, Kilpatrick and Laros gave what they found to be the mean lengths of labor for nulliparous and multiparous mothers both with and without anesthesia for 6,991 subjects. Since we would like to compare the labor times of women getting chiropractic care with normal labor times found in the medical literature, the Kilpatrick and Laros definition of labor onset seems reasonable. We will define the end of labor as the time when the baby is born. The data for labor time that we will use as a control will be from this paper. See Table 1.

**Table 1. Table 1.** Average Labor times for a normal labor according to Kilpatrick and Laros definition. (Rounded to the nearest whole number)

| Number of Deliveries | No Anesthesia | Anesthesia |
|---|---|---|
| Nulliparous | 9-19 hours | 11-21 hours |
| Multiparous | 6-13 hours | 8-17 hours |

In a previous senior research project using a survey, the researchers found that the average labor time of patients who received chiropractic care during pregnancy was 7.2 hours for a first birth and 5.7 hours for a second or more birth (1). The limitations of this study included a small sample size, difficulty in knowing when labor actually started (they used the mother's perception of labor and contractions being reported at ten minutes apart that lead to delivery as their definition of labor), the exact type of chiropractic care and number of treatments was not reported, the age of the mother, pain medications used, and positions and relaxation during labor were not considered, and the subjects were all associated with Logan College of Chiropractic and therefore are assumed to be more health conscious than the general public. Even with the limitations, a positive trend towards shorter labor times for women who had chiropractic care during pregnancy was reported. Therefore in this study, we would like to try to eliminate some of the limitations of the previous study to gather even more information on the subject.

The ease of labor and delivery has been rated by Gordon et al using a series of questions in a postpartum interview (9). The questions included use of interventions such as cesarean, forceps or vacuum extraction, epidural anesthesia, other analgesia and Oxytocin, evaluation of the birth experience, and ease of breastfeeding. This research was comparing the effect of having a doula present at the birth to the usual care group.

The changes that occur in pregnant women primarily affect the pelvic and spinal ligaments, muscles, joints and other supportive soft tissues (10). These changes cause sprain/strains of pelvic and spinal structures, as well as alteration of the normal spinal curvatures and spinal biomechanics. This results in an increased stress on the body leading to pain and discomfort. The biomechanical changes of pregnancy are both the result of and have an effect on the growing fetus (11). Constraint during pregnancy may cause stress on the fetal spine and affect development (12). Aberrant positioning, such as breech or transverse, also complicates the birth process and increases risk of birth trauma. Ideally, these troubles are avoided by establishing a stable, functional spine and pelvis before pregnancy and maintaining that balance and function throughout pregnancy. Doctors of chiropractic can alleviate the uncomfortable symptoms arising from the muscular, ligamentous, and biomechanical stresses encountered during pregnancy (13). Specific chiropractic care helps to provide an environment for safer, easier, faster deliveries (14, 15). Obstetric text books site the reasons for dystocia, or difficult labor, as being caused by pelvic imbalance and its resulting effects on the uterus and the baby's position. Chiropractic care throughout pregnancy restores balance to a pregnant woman's pelvic muscles and ligaments and therefore, leads to safer and easier deliveries for her and her baby (16). Therefore, we would like to increase the research on this subject by performing this small controlled study using specific techniques as described later in this proposal.

## Materials and Methods

Subjects were recruited from the population of Logan College of Chiropractic students and student family as defined as spouse, parents or children of Logan students. Participation was voluntary and began between 20-24 weeks of gestation. Subjects participated in an entrance interview (see appendix C3). The entrance interview was performed by one of the student researchers to determine if the subject met all inclusion criteria, did not have any exclusion criteria, and were willing to sign a consent form. Those subjects who met the criteria were included in the study and the subjects who did not were dismissed. Inclusion criteria were as

follows: 20-24 weeks pregnant; enrolled in a separate pre-natal care protocol with an outside provider; and a Logan College Student or member of the family of a Logan Student. Exclusion criteria were as follows: subjects with known complications that would hinder the possibility of a normal pregnancy and birth were excluded. These complications include placenta previa, gestational diabetes, pre-eclampsia, history of a stillbirth, and multiples (twins, triplets, etc.). The subject who was planning to have a cesarean or a planned induction of labor was also excluded from the study. Any subjects who refused to discontinue all other chiropractic adjustments during the study period were excluded from the study. If the treating doctor of chiropractic (D.C.) determined that the subject needs chiropractic care more than once per week, or a different technique to adjust the sacrum, the date was documented to show this additional care. If the subject was using, or planned to use, one of the study investigators as a doula for the delivery, the subject was excluded from the study. Once a subject was included, they were asked to rate their pain medication preference on a scale (see appendix C4). The consent form contained all subject requirements which included: type and frequency of adjustments, the post-partum interview process, and the benefits, risks, and alternatives to participating in the study. The subjects were required to discontinue all other chiropractic care during the study period. They were expected to continue their medical prenatal care as directed by their health-care provider. Subjects were also encouraged to continue their regular chiropractic care after the birth of the baby. The subjects were assigned a case number once they were entered into the study. At that time, the subject was assigned to a student researcher and treating D.C. for all future contacts. All records pertaining to the study were maintained as per HIPAA. Subjects were expected to come to all scheduled adjustments which included hamstring release, piriformis contact, sacral unlock, apex contact, and perineal contact as described by Patrick Montgomery D.C., William Coggins D.C., Lawrence Hutti D.C., H.B. Logan D.C., and Dale Montgomery D.C., respectively (17).[1] For a description of these techniques, see appendix C1. Palpation to determine how the patient was adjusted on each visit was done by Patrick Montgomery D.C. or Robyn Lawrence D.C. and included the HELPS signs (high iliac crest, tight erector spinae,

[1] Some of the subjects in the study received Diverified adjustments for complaints not relieved by the basic protocolThe following patients received Diversified adjustments. These are the abbreviations used cervical spine (c/s), thoracic spine (t/s), lumbar spine (l/s), lumbocervical break (lsb), pubic symphysis (ps), pelvis (p), and extremities (including ribs) (e).
005 – c/s x2, t/s x1, l/s x1, lsb x2, ps x7; 006 – c/s x1, t/s x2, e x3; 008 – ps x1; 009 – l/s x1; 010 – t/s x2, l/s x1, e x7; 011 – lsb x1, ps x1; 012 – e x8; 013 – c/s x6, lsb x1; 014 – lsb x1; 017 – e x1; 018 – coccyx adjusted with Activator x3; 035- c/s x7, t/s x8,e x1,p x1; 036-c/s x3,t/s x1,l/s x1,p x4,lsb x3; 037-c/s x7, t/s x3, p x1, e x1; 038- c/s x4,t/s x1, lsb x2, e x1; 039- c/s x8,t/s x1,p x1,coccyx with activator x1; 040- c/s x 1, t/s x 1, p x2, lsb x1; 041- c/s x2, t/s x1, l/s x1, e x3, lsb x1; 043- t/s x1, e x1; 044- t/s x1, p x1

rotation of lowest freely moveable vertebrae, pain over sacroiliac joint, and tight sacrotuberous ligament) as well as any of the other 14 indicators described by H.B. Logan D.C. (17). For a description of these indicators, see appendix C1. The Webster technique will also be performed as described by Larry L. Webster D.C. (22). For a description of this technique, see appendix C1. All adjusting was performed by Dr. Montgomery or Dr. Lawrence. The adjustments were recorded on the research SOAP note (appendix C8) by the student researchers. For each subject, the following number of adjustments were administered: one adjustment per week from entering the study to the birth of the baby. If the treating D.C. determined that the subject needed more frequent care, they were seen no more than two times per week and were treated and documented as needing additional care. The post-partum interview took place two weeks after the birth with the exception of case 014 and 045 who were seen at week 6 and 041 and 046 who were seen at week 3 due to a conflict of schedules, and case 015 who did not come in for post-delivery adjustment, yet filled our post-study questionnaire. If a subject missed a scheduled appointment or needed to reschedule an appointment it was scheduled within five days of the original appointment date. For the first missed appointment that is not appropriately rescheduled a note was made in the subject's file. If a patient missed more than two appointments in a row she was then dismissed from the study. Subjects were asked to deliver a questionnaire to the healthcare provider who attended their birth (see appendix C7). This questionnaire included an addressed and stamped envelope that can be returned to the student researchers. To measure labor time, the subject was asked to record the length of labor as defined using the Kilpatrick and Laros definition of labor onset, and the end of labor as when the baby is born (8). When all study participants have completed the final interview, the data was analyzed. Two weeks following the birth, subjects returned for a post-study interview (see appendix C5) during which time they were asked to fill out the subjective rating of labor ease questionnaire (appendix C6).

To measure the length of labor, the data provided by the subject was used. To measure ease of labor, three methods were utilized. First, the woman was asked to subjectively rate her impression of the ease of labor (appendix C6). Second, the woman's birth attendant who delivered the baby was asked to rate their impression of the woman's ease of labor (appendix C7). Third, the percentage of interventions including unplanned cesarean, forceps or vacuum extraction, epidural analgesia, and Oxytocin or analgesia during the first stage of labor were compared to the percentages in the obstetric literature (9).

## Results

There were 46 subjects enrolled in the study and 41 completed all the requirements. Subject number 007 missed three appointments in a row and was dismissed from the study. Subjects 014, 028, 033, 039, 040, 042, and 045 all completed all of the patient requirements but the birth attendants have not returned the questionnaires. Subject 015 completed all of the adjustment requirements, however, failed to comply with the post study requirements and her birth attendant has not returned the questionnaire. Subject number 016 did not meet the inclusion criteria and was dismissed from the study. Subject number 019 dismissed herself from the study. The data for the labor time as reported by the subjects in the post study interview is included in Table 2. The parity of the subject is reported as nulliparous for subjects who entered the study with no previous children born and multiparous for women who entered the study with previous births. The number of previous children is included for the multiparous subjects.

**Table 2.** Labor times reported by subjects.

| Case Number | Labor Time (Hours) | Parity of Subject | Anesthesia (Yes or No) |
|---|---|---|---|
| 1 | 12 | Nulliparous | Yes (epidural) |
| 2 | 6 | Mulitparous (1) | Yes (epidural) |
| 3 | 5.5 | Nulliparous | No |
| 4 | 10 | Multiparous (1) | Yes (epidural) |
| 5 | 5.5 | Multiparous (2) | No |
| 6 | 1.25 | Multiparous (2) | No |
| 8 | 3.75 | Multiparous (1) | No |
| 9 | 5.5 | Multiparous (1) | No |
| 10 | 16 | Nulliparous | Yes (epidural) |
| 11 | 5 | Multiparous (1) | No |
| 12 | 3.5 | Multiparous (3) | No |
| 13 | 2 | Multiparous (1) | Yes (epidural) |
| 14 | 1.5 | Multiparous (1) | No |
| 17 | 10 | Nulliparous | No |
| 18 | 6.5 | Nulliparous | Yes (epidural) |
| 20 | 10 | Nulliparous | Yes (epidural) |
| 21 | 12 | Nulliparous | Yes (epidural) |
| 22 | 5 | Nulliparous | Yes (epidural) |
| 23 | 12 | Nulliparous | Yes (epidural) |
| 24 | 12 | Multiparous (1) | Yes (epidural) |
| 25 | 12 | Nulliparous | Yes (epidural) |
| 26 | 22 | Nulliparous | Yes (epidural) |
| 27 | 6 | Nulliparous | No |
| 28 | 6 | Nulliparous | Yes (epidural) |
| 29 | 15 | Nulliparous | Yes (epidural) |
| 30 | 15 | Nulliparous | No |
| 31 | 8 | Nulliparous | Yes (epidural) |
| 32 | 3 | Multiparous(1) | Yes(epidural) |
| 33 | 26 | Multiparous (1) | Yes (epidural) |
| 34 | 10 | Nulliparous | Yes (stadol) |
| 35 | 36 | Nulliparous | Yes (epidural) |
| 36 | 43 | Nulliparous | Yes (epidural) |
| 37 | N/A | Nulliparous | Yes (epidural) |
| 38 | 25 | Nulliparous | No |
| 39 | 19.5 | Nulliparous | Yes (epidural) |
| 40 | 12 | Nulliparous | Yes (epidural) |
| 41 | 6 | Nulliparous | No |
| 42 | 22 | Nulliparous | No |
| 43 | 11 | Nulliparous | Yes (epidural) |
| 44 | 22 | Nulliparous | Yes (epidural) |
| 45 | 8.5 | Multiparous (3) | No |
| 46 | 27 | Nulliparous | Yes(epidural) |

The average labor time for all 41 subjects was 12.82 hours. The average labor time for the nulliparous subjects was 12.44 hours without anesthesia and 16.16 hours with anesthesia. The multiparous subjects average labor times were 4.31 hours without anesthesia and 9.83 hours with anesthesia. The mean lengths of labor for nulliparous and multiparous mothers both with and without anesthesia were compared and shown in Table 3. The average labor time of the multiparous subjects who did not receive anesthesia during labor were lower by 1.69 hours than that found in the medical literature done by Kilpatrick and Laros (see Table 1). The labor time for the nulliparous labors

without anesthesia is average according to Kilpatrick and Laros literature; however, is 6.56 hours shorter than the upper limit of Kilpatrick and Laros findings. This is also true for the nulliparous labors with the use of anesthesia with a 4.84 hour decrease from the upper limits of Kilpatrick and Laros values. Within the study, the nulliparous patients have a 3.72 hours difference in average times of delivery from those who had an epidural to those who did not. Also, within the study, there is a difference of 6.38 hours of all subjects labor times, both nulliparous and multiparous without epidurals compared to subjects with epidurals.

**Table 3.** Average labor times for a normal labor according to this research project

| Number of Deliveries | No Anesthesia | Anesthesia |
|---|---|---|
| Nulliparous | 12.44 hours | 16.16 hours |
| Multiparous | 4.31 hours | 9.83 hours |

The subject's evaluation of the birth experience is listed in Table 4 (page 10) and these results were obtained in the post study interview. 36.8 percent of the subjects enrolled in the study felt the birth experience was fairly or very easy and 42.1 percent agreed or strongly agreed that labor was better than expected. The majority of the subjects thought they coped well with labor and 89.5 percent of the subjects agreed or strongly agreed that their overall birth experience was good.

The information obtained from the questionnaire that the birth attendant filled out is displayed in Table 5 (page 10). This table includes any procedures performed during the labor. Additional information reported from the birth attendant includes the ease of labor when compared to other pregnancies; this information is recorded in Table 6 (page16). The birth attendant for subjects 001, 006, 010, 013, 018, 022, 027, 035, and 046 stated the labor was the same as the average labor attended. The labors of subjects 002, 005, 011, 031, and 032 were rated by the birth attendant as very easy compared to the average labor attended. The birth attendant for subjects 004, 008, 009, 012, 017, 023, 024, 030, 038, 041, and 043 rated the labor as fairly easy. The percentage of subjects reported to have a fairly to very easy labors is a majority at 46 percent. For subject 003, the physician rated the subject's labor as fairly difficult compared to the average labor the physician attended because the baby was in a frank breech presentation. According to the physician, the baby turned to the breech position during labor. The only procedure used during this labor was an episiotomy due to the breech presentation.

Table 4. Evaluation of birth experience according to subject

| | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 17 | 18 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | Summary (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Birth experience was** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fairly/very easy | | X | X | X | X | X | | X | | | X | | X | | | | | X | | | | | X | X | X | | | | | | | | | | | | X | X | | | X | 36.6 |
| Normal | X | | | | | | X | | X | | | | | X | | | | | | | | X | | | | | X | | | | | X | | | X | X | | | | X | | 24.4 |
| Fairly/very difficult | | | | | | | | | | X | | X | | | X | X | X | | X | X | X | | | | | X | | | X | | X | X | | X | X | | | | X | | | 36.6 |
| **Labor was better than expected** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Strongly agree/agree | X | X | X | X | X | | X | X | | X | X | | X | X | | | | X | | | | | X | | | X | X | | | | | | | | | | X | | | | X | 41.5 |
| Neutral | | | | | | X | | | X | | | | | | | | X | | X | | | | | X | | | | | | | | | | X | | | X | X | X | X | | 24.4 |
| Strongly disagree/disagree | | | | | | | | | | | | X | | | X | X | | | | X | X | X | | | X | | | X | | X | X | | X | | X | | | | | | 29.3 |
| **Coped well with labor** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Strongly agree/agree | | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | | X | X | | X | X | X | X | | X | X | | | | X | | X | X | X | | X | | X | X | X | 73.2 |
| Neutral | X | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | X | | | | | | | | X | | | 12.2 |
| Strongly disagree/disagree | | | | | | | | | | | | X | | | | | | | | X | | | | | | | | | X | | | | | | X | | X | | | | | 12.2 |
| **Birth experience was good** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Strongly agree/agree | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | | X | X | X | X | X | X | X | X | X | X | | | | X | | X | X | X | X | X | X | X | X | X | 87.8 |
| Neutral | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | X | | | | | | | | | | 2.4 |
| Strongly disagree/disagree | | | | | | | | | | | | | | | X | | X | | | | | | | | | | | | | | | X | | X | | | | | | | | 9.8 |



Table 5. Procedures used during labor according to birth provider (X = intervention was used; * Birth attendant did not report)

| Procedures and pain medications used: | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 17 | 18 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cesarean section | | | | | | | | | | | | | | | | X | X | | | | | | | | X | | | | | | | | X | | | | | | | | |
| Forceps or vacuum extraction | | | | | | | | | | | | | | | | | | | | X | | | | | | X | | | | | | | | | | | | | | | | |
| Uncomplicated vaginal delivery | X | X | | X | X | X | X | X | X | X | X | X | | X | X | | | X | X | X | X | X | X | | | X | X | X | | X | | | | | | X | | | | | | |
| Episiotomy | | | X | | | | | | | | | | | | | | | | | | X | | | | | | X | | | | | X | | X | | | | | X | | | |
| Epidural | X | X | | X | | | | | X | | | X | | | X | X | X | X | X | X | X | X | | | X | | X | X | | | X | X | X | X | | | | | X | X | | X |
| Analgesia | | | | | | X | | | X | | | | | | | | | | | | | | | | | | | | | X | | * | | | | | | | | | | |
| Oxytocin | X | | | X | X | X | X | | X | | | * | | X | X | | | | | | X | X | | | X | | X | X | | X | | | | | | | | X | X | | X |
| Breaking of amniotic sac | | X | | | | X | | | | X | | | | X | X | X | | | | | | | | | | | X | X | | X | | X | | | | | | X | | | |

Subject 006 was given a local only analgesia, which can include a pudendal nerve block, perineal infiltration, and/or paracervical block. Strictly local anesthesia does not include epidural anesthesia (regional anesthesia) or the use of injected or inhaled general anesthetic drugs. Subject 008 did not have an episiotomy, but the birth attendant noted a secondary laceration. Subject 009 had an uncomplicated vaginal delivery with no interventions. However, the midwife reported her tailbone broke during the delivery. During the post study consultation x-rays of the coccyx were performed and revealed a fractured coccyx. Subject 009's coccyx also fractured during the delivery of her first child. The physician of subject 010 reported the use of Pitocin for augmentation. Subject 011 required no interventions except for an artificial breaking of the amniotic sac and the birth attendant reported no complications but noted a nuchal cord x1 (umbilical cord around baby's neck one time). Subject 013's physician did not report whether Oxytcin was used during labor. Subject 014 had an overall uncomplicated labor and delivery, however, after delivery of the placenta the subject began to hemorrhage. At that point she was taken to the hospital via ambulance and was given a dilation and curettage and a blood transfusion. The patient had a home birth and the birth attendant was unable to attend the labor until the placenta was extracted therefore she received no interventions. Subject 017 did not have an episiotomy; however she did have a third degree tear that went partially into the rectal musculature. Oxytocin was used after delivery of the placenta for uterine atony. The physician noted that subject 018 had an epidural with anterior lip. The subject for case 019 removed herself from the study. Induction of labor was performed for subject 020's labor with breaking of the amniotic sac and Oxytocin augmentation. The use of forceps was attempted during labor before the subject was moved to a cesarean. Subject 021 was also given a cesarean due to the cord being wrapped about the baby's neck twice. Subject 022 and 023 both had an epidural with no reported complication or other interventions. An epidural was performed during the labor of subject 024 with the use of vacuum extraction to assist. Subject 025 delivered with an episiotomy, epidural, and Oxytocin; the baby had a posterior occiput presentation. Pitocin was augmented during the labor of subject 026 when no cervical change occurred after 8 hours along with an epidural and Oxytocin. There were no complications or administration of medical procedures during the delivery of case 027. The physician reported the tissue was well prepared for delivery. Subject 029 was given an epidural and Oxytocin with no change of the cervix beyond 6 cm resulting in a cesarean. Subject 030 had no medication or medical intervention

other than vacuum extraction to assist due to maternal exhaustion. The procedures used for subject 031 included: episiotomy, epidural, Oxytocin, and breaking of the amniotic sac. Subject 032 also had epidural, Oxytocin, and breaking of the amniotic sac with no complications. There was no report from the physician for subject 033. Subject 034 had the initiation of labor by breaking of the amniotic sac and sustained by Oxytocin with analgesia, Stadol. The time of labor for subject 035 was reported as unknown due to transfer of care during labor. Subject 035 initially was under the care of a home birthing center when failure to progress from 5 cm for 5 hours. Subject 035 was given epidural and progressed through labor with labor difficultly reported as the same as normal. Subject 036's labor consisted of an epidural, episiotomy, Oxytocin, and breaking of the amniotic sac with a reported of labor being fairly difficult. Additional treatment was also necessary for subject 036 during the course of gestation for reasons other than pregnancy. Subject 037 reported to have never been in labor and undergone a cesarean with epidural. The physician did not report of the ease of labor, but did report a malpresentation with hand. Subject 038 and 041's physician reported the labor to be fairly easy with no intervention or complications. Subject 039 and 040's physician did not reply to the post labor questionnaire. Subject 043's physician reported the labor to be fairly easy with the used of epidural, Oxytocin, and breaking of the amniotic sac. The physician attending subject 044's labor reported premature rupture of amniotic sac with patient attempting natural delivery, but ended up having a late epidural due to increased pain from Pitocin side effect. Subject 45 was a multiparous subject and reported the labor to consisted of 2 pushes for the delivery and was by far the easiest labor pain wise. The labor of subject 46 was uncomplicated vaginal delivery; however was augmented Pitocin when progression slowed. The subject was also given an epidural.

## Discussion

There are many possible benefits of a shorter, less painful labor and delivery. These include a reduced need for interventions (including episiotomies, Pitocin for augmentation of contractions, forceps delivery, pain medications, epidurals, and cesarean section), faster recovery for the new mother, and ease in beginning the breastfeeding relationship. There are many non-pharmacologic methods of pain reduction for the woman to use during labor and delivery. It has been found that having the continuous physical and emotional support of a doula present during

labor and delivery can increase the percentage of mothers who rate their birth experience as positive (9), reduce the need for pain medication, reduce the need for medical interventions like Pitocin and cesarean section, and increase the chance for establishing a successful breastfeeding relationship (18). Warm water bath during active stage of labor is another safe and effective method of pain relief (19). Intradermal injection of sterile water in the sacral area is a technique to decrease low back pain during labor. The injections cause a burning sensation thought to counter-irritate the labor pain (19). The pain reduction usually lasts for 45 to 90 minutes but has not shown to reduce the request for pain medication. A study by Simkin and O'Hara demonstrated that various positions of the mother showed a decrease in the use of analgesia, improved obstetric outcomes, and safe for both the mother and infant (20). It is important to consider all the factors that can reduce the need for pain medications during labor because those medications do have an effect on the mother and baby after the birth.

In the United States, approximately 2.4 million women receive an epidural every year during childbirth (25). There are numerous side effects from the epidural to the woman, the infant, and the mechanism of labor and delivery even though the medical community deems them safe. The trouble with the concept of safe is that some bad events are likely to happen at some point in time even if it is a remote possibility. For example, epidurals can cause spinal headaches, persistent back pain, incontinence, increases the risk of maternal fever, and a rare but real chance of irreversible nerve damage to the mother (21). Significant relationships were found with four outcomes: increased use of forceps or vacuum extractor, increased length of second stage labor, increased incidence of cesarean birth, and increased need for Oxytocin augmentation (32). One study from Italy found that hypotension and pruritus were significantly high in patients that received combined spinal-epidural analgesia (25). Studies have also shown that epidurals increase the c-section rate, increase the likelihood of other interventions like episiotomies and forceps extraction, and decrease the patient's ability to bear down (21). Infants whose mothers had an epidural cried more and had a higher temperature after birth. No one knows the exact reason for those findings, but it has been speculated that the crying could be a sign of frustration at not being able to suck the breast, when the instinct to reach out to the breast is there (22). Fetal distress can occur following the use of epidural. This is caused by the fetal heart rate decelerating due to decreased uterine contractions with subsequent decrease of fetal oxygen delivery and fetal acidosis (27). The use of extradural analgesia for vaginal breech

delivery found a lower mean one minute Apgar score of the infant compared to the non-analgesic group (28). The American Pregnancy Association believes the benefits of epidural analgesia to be pain relief for the mother, consciousness during cesarean section, rest for prolonged labors, and have the mother active during the birth process (29). There has been recent introduction of techniques like combined spinal epidural, low dose epidural local anesthetic infusion, and patient controlled epidural analgesia that are believed to have fewer side effects on the outcome of labor than the epidural itself (30). Yet more studies need to be conducted.

Furthermore, "in 2005, 30.2% of U.S. women gave birth by cesarean section, and of those giving birth vaginally, one-third had an episiotomy (31). Cesarean section is the most commonly performed surgery in the United States (34). There has been an increase in cesareans from 4 percent in 1965 to 33 percent today (34). The increase of these surgical procedures in association with the need to train residents, few practical skills for supporting women's ability to labor, rigid view of duration of normal labor, and low threshold for definition for "labor dystocia" (34). The cause of this increase in cesareans may not have the mother's in labor as a top priority with the many side effects associated with this major procedure. It is believed that the reason for the caesarean delivery is the analgesia was given early in labor, before the cervix was dilated to 5 centimeters (26). The length of labor is slowed when given analgesia in the first stage due to gradual cervical dilation and decreased in the second stage due to reduced uterine contractility (26).

The ease of labor and delivery has been rated by Gordon et al using a series of questions in a postpartum interview (9). In our study, we had the subjects rate their labor and delivery experience in a postpartum interview two weeks after the birth of the baby (with the exception of subject numbers 007,014, 015, 016, 019, 035, 037, 041, 043, 045, and 046). The data is included in Table 4. This data was used as our subjective data for the mother's impression of her birth experience. We also used objective data of the mother's impression by having her rate her plans for the use of medication during labor on a -10 to +10 scale adapted from the book Pregnancy, Childbirth and the Newborn (21, see appendix C4). We took their pre-study pain assumptions and analyzed them in comparison to their subjective ratings of labor. We are going to compare subjects 004, 009 and 011 who all had uncomplicated vaginal births according to the birth attendant. Subject 004 wanted epidural anesthesia in active labor (4-5 cm) and wanted to try to cope until then, perhaps with narcotic medications. Subject 009 definitely did not want pain

medications and wanted her support team and the staff to refuse her requests for medication. Subject 011 strongly desired a natural childbirth because of the benefits to her baby and to her labor as well as the gratification of meeting the personal challenge and would be disappointed if she used pain medications. Of these three cases, subject 004 was the only one who had an epidural during labor. Subject 004 rated her labor as being very easy. Subject 009 rated her birth as being fairly easy, while 011 rated her birth as being fairly difficult. There can be a wide range of subjective ratings of a birth based on pain medications and procedures that were used or not used. It is recognized that just because a subject does not receive an epidural does not mean that labor is or has to be difficult, but clearly it can be. However, if an epidural is received during labor that does not necessarily increase the ease of labor and delivery. An example of this is subject 013 who had a strong desire to avoid pain medications because of the side effects to her, her labor, and her baby but also stated she would accept medications if labor became difficult or very long. This subject rated her labor as being very difficult but did have an epidural.

Complications associated with epidural analgesia is excessive motor block prolongs the second stage of labor and increases the frequency for instrumental delivery (33). Cases 024 and 041 will be compared in the instance of this complication associated with epidurals. Subject 024 underwent an epidural during delivery. The data from her case reports the labor lasting 12 hours and the used of forceps. Subject 024's physician reported the labor to be fairly easy, while the subject reported the labor to be fairly difficult and experience birth and coping with labor as fairly difficult as well. Subject 041 did not undergo an epidural. As a result, the labor time was reported at 6 hours. Subject 041's physician also reported the labor the fairly easy, while the subject agreed stating her birth experience and coping with labor was fairly easy.

The final method that was used to determine the ease of labor was a subjective rating of the individual who attended the birth. The questions used were very similar to the subjective questions answered by the mother. Even though we did not have a control group for these measurements, we believe that valuable information could be obtained from this data. If the birth care provider and the mother both rate the birth experience as easier than other labors, it may help other birth care providers to encourage chiropractic care for their pregnant patients in the future. The following cases show reports by both mother and attending physician of labor as fairly easy: 004, 005, 009, 012, and 027. See Table 6 (page 16) for birth attendant's rating.

**Table 6.** Birth attendant's evaluation of the birth experience in comparison to the average labor they have attended.
*birth attendant did not report

| | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 14 | 13 | 17 | 18 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | Summary (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Birth experience was:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fairly/very easy | | X | | X | X | | X | X | | X | X | * | | X | | | | | X | X | | | | * | | X | X | X | * | | | | * | X | * | * | X | * | X | | * | | 47 |
| Same as | X | | | | | X | | | X | | | * | X | | X | | | X | | | | | X | * | | | | * | | X | | * | | * | * | | * | | | * | X | 26 |
| Fairly/very difficult | | | X | | | | | | | | | * | | | | X | X | | | | X | X | | * | X | | | * | X | | X | * | | * | * | | * | | X | * | | 26 |

## Conclusion

The results of this pilot study show that there is a trend towards having a shorter and easier labor for women who were treated with this adjusting protocol. One limiting factor of this study is the availability of the patient and their ability to comply as well as the care provider's availability. Another complicating factor in this study is related to the study population being limited to Logan students and student family. First, many members of the Logan community are more holistically oriented and may avoid interventions during labor and delivery more readily than the average American woman. Second, the majority of the study population had been adjusted regularly prior to entering the study. Therefore, they sometimes had preconceived ideas about adjustments that they may need outside of the study protocol. In this study population there was a difference noted by the researchers as to whether the subject was a Logan student or student family and how they responded to the study protocol. Student family members tended to be very satisfied with the care while Logan students sometimes felt they "needed" an adjustment with a different technique sometime throughout their care. Finally, since the majority of the study population had been receiving regular chiropractic care, their pelvic biomechanics may have been more balanced than the average pregnant patient.

The conclusion of this pilot research study shows by the increased number of participates that underwent the used of epidural anesthesia, there was an increase in the labor time by 3.72 hours for the nulliparous participants. This use of epidural procedure also showed within the study the use of forceps to assist in delivery, possibly as a result of the mother not being able to bear down as a side effect of the epidural seen in case 024 and supported by sources. There was a distinctive finding within this study showing a direct correlation to the increase of labor time when an epidural medical procedure was performed. The nulliparous subjects who underwent an epidural had an increase of 3.72 hours to the labor time of the non-epidural subjects. Also, the multiparous subjects who were subject to an epidural had an increase of an astounding 5.52 hours when compared to the times of the non-epidural multiparous subjects.

A significant finding to the ease of labor is the documentation of the experienced subjective findings of the birthing attendants' opinion of the labors. This experienced opinion of the physician made up 47 percent of all cases, nearly doubling each of the other categories, who reported the labors were considered fairly easy to very easy in the post questionnaires. An additional finding to ensure that the Logan Basic Pregnancy Protocol including the Perineal

Technique and Webster Technique assist in the ease of labor is the awareness of the physicians of the preparedness of the pelvic floor for delivery. This preparedness of the pelvic floor was report by the attending physician in case 027, as well as, several of the subjects aware of not having extreme tearing or discomfort after deliver. This is proof that by balancing the pelvis along with the pelvic floor, the body is more prepared for this major event in live of giving birth.

The overall goal of this study to prove the ease and decrease of labor time is accomplished by the data reported. The nulliparous deliveries, although within normal values, show a decrease of 6.56 hours and 4.84 hours from the upper limits of medical literature. The multiparous also prove these findings with 1.87 hours from the lower limits and 7.17 hours decrease from the upper limits. The use of chiropractic treatment during pregnancy is proven to be beneficial for mothers-to-be during pregnancy to assist in the easing of delivery and decrease of labor time by balancing the pelvis and preparing the pelvic floor. The perception of this study is that Logan Basic Technique has the best effect on the ease and time of labor when not associated with outside medical intervention and allowing the body to labor naturally. Further research with Logan Basic Technique and pregnancy should be performed with all natural birthing participants.

**Consent Form:**

Logan College of Chiropractic
1851 Schoettler Rd. Chesterfield, MO 63017
Phone (314) 227-2100

Informed Consent Form

The Logan College student research group of Neely Berry, Shauna Schroeder, and Chad Richards has requested my participation in a research study at this institution. The title of the research is, "Does the Logan Basic Protocol for chiropractic care during pregnancy reduce labor time and increase the ease of labor and childbirth?"

I understand that the purpose of this research is to compare the length and ease of labor and delivery of women who had chiropractic care during their pregnancy with the labor times reported in obstetric literature. Labor onset is defined as the time when a woman recalled regular, painful contractions every 3-5 minutes that led to cervical change. The end of labor will be defined as the birth of the baby. I understand my participation will include a pre-study interview, up to 18 adjustments, and a post-partum interview.

I understand that I will not be allowed to receive any chiropractic care outside of this study until after the birth of my child. I understand that I will continue my regular prenatal care as directed by my healthcare provider.

The Logan Basic Protocol contains a number of techniques that will be used during each visit. During the main adjustment the doctor will use his or her thumb to contact the sacrotuberous ligament which is located right next to your tailbone. This contact is designed to balance the muscles and bones of your spine. During the fifth month of your pregnancy, the doctor will begin using another technique in addition to the one described above. For this technique, the doctor will contact the perineal muscles which are located next to the anal opening. These muscles can get tight during pregnancy and this contact is designed to help relax them. I understand the main techniques that will be used for adjusting during this study.

The risks of this research study are limited to the risks associated with the Basic technique of adjusting. There are no known physical, social, or legal risks to me or my fetus associated with this study. The psychological risks to me or my fetus may include ridicule from my healthcare provider for participating in a chiropractic research study. To minimize this risk, the investigators have fully explained the study and the adjusting procedures to me. The possible economic risks to me and my fetus include potentially missing work for a study related appointment. To minimize this risk, the researchers have agreed to work around my schedule, to the best of their abilities, for my appointments. I understand the risks, benefits, and alternative treatments associated with my participation as explained by the student research group.

I understand that the research group may terminate my participation without regard to my consent if, in the researchers' judgment, it is in my, or the fetus', best interest to do so. I understand that I have the right to terminate my participation at any time that I so choose without penalty or prejudice.

I understand that the results of this study may be published but that my name or identity will not be revealed. I understand that any questions I may have concerning this study, before or after my consent, will be answered by Neely Berry, Shauna Schroeder, Chad Richards, Dr. Montgomery or **Dr. Lawrence**.

I understand if I have further questions concerning the research or my rights as a research participant, I may contact Dr. John Gutweiler, Chairman of Institutional Review Board (phone: 636-230-1910).

I have read the above statement and have been able to ask questions and express concerns, which have been satisfactorily responded to by the student research team. I understand the purpose of this study as well as the risks involved. I hereby grant my informed and free consent to be a participant in this study.

| | |
|---|---|
| Participant Name (print) | Phone Number |
| Participant Signature | Date |
| Witness Name (print) | Phone Number |
| Witness Signature | Date |

**HELPS signs and Indicators:**

The HELPS signs and the other 14 indicators for the Basic Technique are described below. Each of these indicators is found by palpation with the doctor comparing the patient's left side to their right side.

- "H" stands for high iliac crest – this is typically found on the side of AI sacrum.
- "E" stands for erector spinae tension – this is typically found on the side of AI sacrum.
- "L" stands for the body rotation of the lowest freely movable vertebra – the body typically rotates to the side of AI sacrum.
- "P" stands for pain – this is a subjective finding which may or may not be present. It is typically found on the side of AI sacrum.
- "S" stands for sacrotuberous ligament tension– this is typically found on the side of AI sacrum.

The HELPS signs can be used to determine the side of AI sacrum in most cases. The majority of the signs should be on the same side. If there is incongruence of the HELPS signs, the other 14 indicators can be used to determine the side of AI sacrum.

The following indicators are found on the same side as the AI sacrum: Anterior sacrum, taut erector spinae, prominent PSIS, high iliac crest, sacrosciatic ligament, tip of the coccyx, fifth lumbar rotation, increased gluteal dimple, knee flex, functional short leg, gluteal line deviation, and moderate to severe pain. Toeing out/ foot flare indicates piriformis involvement and can be found on either side. It could also be found on both sides in which case, both will be adjusted. Taut hamstring muscles are usually found on the side opposite of AI sacrum.

**Adjusting Techniques:**

All of the procedures are performed with the woman lying on her stomach, except the second part of the Webster technique which will be performed with the patient lying on her back. The adjusting table can be released in order to accommodate the patient's growing belly.

The hamstring release is performed on the side of taut hamstring muscles to release the tension and make the pelvic adjustment easier. The doctor places the pads of both thumbs into the tight area of the hamstring muscle and presses toward the patient's head firmly until the muscle is stretched. Then the doctor thrusts both thumbs toward the patient's head quickly. The doctor will then recheck to be sure the muscle has relaxed.

The doctor will perform the piriformis contact. This will be done on the side opposite the AI sacrum unless the toeing out indicator reveals involvement on the side of AI sacrum. The doctor

will palpate the superior edge of the piriformis muscle and then take a contact under the muscle with the tip of their thumb. The doctor directs the contact posteriorward (toward the ceiling) and slightly inferiorward (toward the patient's feet). The contact is maintained until the muscle relaxes. The doctor may also feel the lower back muscles (erector spinae) relax. If the indicators dictate that this needs to be done on both sides, the doctor will perform it on both sides.

The sacral unlock is performed on the side of fixated sacrum. This is usually the side opposite the AI sacrum, but can also be determined by flexing both the patient's legs toward their buttock and feeling for the side of greater resistance. The side of greater resistance is the side of contact. The doctor will contact the locked SI joint with their thenar eminence on the sacrum and the hypothenar eminence on the iliac bone. The other hand will block movement of the pelvis by stabilizing the ischial tuberosity on the other side. The patient will then "walk" in place by moving their hips superiorly one at a time until the joint is freed. This step will also satisfy the first part of the Webster technique.

The apex contact is designed to balance the muscles of the spine side to side on the entire length of the spine from the pelvis to the suboccipital region. This balancing will correct the spinal subluxations above the sacrum. The contact is taken with the doctor's thumb under the patient's sacrotuberous ligament. The doctor will direct the line of drive toward the ceiling and lateral, with the degree of laterality corresponding to the level of the spinal adjustment.

The perineal contact is designed to help return the pelvic floor muscles to their normal resting tone which may help ease the different phases of labor and should begin in the fifth month of pregnancy. The contact is taken next to the anal opening on the side of the perineal muscles that correspond to the side of AI sacrum with the tip of the doctor's thumb. The line of drive is toward the patient's belly button. The contact is held until the doctor feels the muscles relax.

The Webster technique is designed to correct uterine torsion due to an imbalance in the pelvic biomechanics. The first part of the technique is designed to unlock the sacrum, which has been performed during the sacral unlock. The second part of the technique is designed to relax the round ligament. This ligament, which contains some smooth muscle fibers, holds the uterus in place in the front of the body and can therefore restrict the fetus' growth or movements if the tension is unequal from side to side. The contact is taken with the doctor's thumb under the round ligament and held until the ligament relaxes.

Appendicies:

**C3**

Name: _____
Address: _____
_____
Home Phone: _____
Cell Phone: _____

## GENERAL

1. Are you (circle one):
   Logan Student Spouse or significant other of Logan Student Outpatient Other
2. What week of pregnancy are you in? _____
3. Have you had any previous births? Circle: Yes No If so, how many? _____
4. Has your doctor told you that you have any pregnancy complications such as placenta previa, gestational diabetes, or pre-eclampsia? Circle: Yes No
   Please list: _____
5. Do you smoke, drink alcohol, or use any other recreational drugs? Circle: Yes No
   Please list: _____
6. Do you take any prescription or over-the-counter medications? Circle: Yes No
   Please list: _____
7. Are you currently carrying multiples? Circle: Yes No
8. Do you plan to have a doula or other continuous labor support? Circle: Yes No
9. Do you plan to have a ceasarian? Circle: Yes No
10. Do you plan to have an induced labor? Circle: Yes No
11. Do you plan to use pain medication during labor? Circle: Yes No
    If so what type and when? _____
12. Do you plan to breastfeed? Circle: Yes No

## PRENATAL CARE

1. What type of provider are you using? Circle as appropriate:
   OB/GYN Family practitioner Midwife Other: _____
2. Have you had any pre-natal testing done? Circle: Yes No
   If yes, what tests? _____
3. Are you taking or do you plan to take any childbirth preparation classes?
   Describe: _____

## DIET

1. Are you taking pre-natal vitamins? Circle: Yes No
   If so, what type? _____
2. Are you taking any other nutritional supplements? Circle: Yes No
   If so, please list: _____
3. Are you on any kind of special diet? Circle: Yes No
   If so, please explain: _____
4. Have you made any changes to your eating habits since you became pregnant?
   Circle: Yes No Please explain: _____
   _____
5. What types of beverages do you drink? _____
6. How much water do you drink per day? _____

## EXERCISE

1. Do you exercise? Circle: Yes No
2. How many times per week do you exercise? _____
3. On average, how long do you work out at each session?

**CHIROPRACTIC CARE**

1. Have you had any previous chiropractic care? Circle: Yes No
   Please describe:_____
2. Are you currently getting chiropractic care? Circle: Yes No
   If you are, please describe your care. (What is the care for? How often? How long? What is being done?) _____
   _____

**If you have previously given birth, please answer the following questions.**

1. How long was your labor? _____
   (Labor onset is defined as "the time when a woman recalled regular, painful contractions every 3-5 minutes that led to cervical change." The end of labor will be defined as the birth of the baby.)
2. Do you know the presentation of the baby? Circle: Yes No
   If so, please circle as appropriate:
   Breech Head First Occiput Posterior Occiput Anterior
3. Did you have a C-section or vaginal birth? _____
4. At what week of gestation was your baby born? _____
5. Did the doctor or midwife use forceps or vacuum extraction? Circle: Yes No
6. Did you have an epidural? Circle: Yes No
   If so, when was it administered? _____
   How long after the epidural did you deliver? _____
7. Did you have an episiotomy? Circle: Yes No
   If you did not, was there any tearing that required stitches? Circle: Yes No
8. Did you breastfeed or formula feed?_____
9. Did you have a doula or other full-time birth support? Circle: Yes No
   If so, please give a brief description._____
   _____
10. How do you feel about your previous birth experience?_____
    _____
    _____
    _____

## Pain Medication Preference Scale (PMPS)

Adapted from Pregnancy, Childbirth, and the Newborn by Penny Simkin, P.T.

| Rating | Your Preference |
|---|---|
| +10 | I do not want to feel any pain. I prefer to be numb and to get anesthesia before labor begins. |
| +9 | I want to have as much pain medication as I can have. I fear labor and believe I cannot deal with the pain and stress. |
| +7 | I want anesthesia in labor as soon as the doctor/midwife will allow it, preferably before labor becomes painful. |
| +5 | I want epidural anesthesia in active labor (4-5 cm). I will try to cope until then, perhaps with narcotic medications. |
| +3 | I want to use some pain medication, but as little as possible. I plan to use self-help comfort measures until I receive medication. |
| 0 | I have no opinion or preference. |
| -3 | I would like to avoid pain medications if I can. If coping becomes difficult, I will not feel guilty taking them. |
| -5 | I have a strong desire to avoid pain medications because of the side effects to me, my labor, and my baby. I will accept medications if labor is difficult or very long. |
| -7 | I strongly desire a natural childbirth because of the benefits to my baby and to my labor as well as the gratification of meeting the personal challenge. I will be disappointed if I use pain medications. |
| -9 | I definitely do not want pain medications. I want my support team and the staff to refuse my requests for medication. |
| -10 | I want no medication, even for cesarean delivery. |

## Post-Study Questionnaire

Case Number:_____

1. How long was your labor? _____
   (Labor onset is defined as "the time when a woman recalled regular, painful contractions every 3-5 minutes that led to cervical change." The end of labor will be defined as the birth of the baby.)
2. Do you know the presentation of the baby? Circle: Yes No
   If so, please circle as appropriate:
   Breech Head First Occiput Posterior Occiput Anterior
3. Did you have a C-section or vaginal birth? _____
4. At what week of gestation was your baby born? _____
5. Did the doctor or midwife use forceps or vacuum extraction? Circle: Yes No
6. Did you have an epidural? Circle: Yes No
   If so, when was it administered? _____
   How long after the epidural did you deliver? _____
7. Did you have an episiotomy? Circle: Yes No
   If you did not, was there any tearing that required stitches? Circle: Yes No
8. Did you breastfeed or formula feed?_____
9. Did you have a doula or other full-time birth support? Circle: Yes No
   If so, please give a brief description._____
   _____
10. What was your baby's head circumference? _____
11. What was your baby's length? _____
12. What was your baby's weight? _____
13. How do you feel about this birth experience?_____
    _____

Appendicies:

**C6**

## Subjective Rating of Labor Ease

Case Number:_____

*Please evaluate your birth experience by circling the statement that matches how you feel most closely.*

1. I felt the birth was ...

   Very difficult  Fairly difficult  Normal  Fairly easy  Very easy

2. I felt the labor was better than expected.

   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

3. I feel that I coped well with labor.

   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

4. I feel that the birth experience was good.

   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

## Cover letter for Questionnaire for the healthcare provider who attended the birth

Logan College of Chiropractic
1851 Schoettler Rd.
Chesterfield, MO 63017-5529

October 1, 2007

Dear Sir or Madam:

We are writing you regarding a research study underway at Logan College of Chiropractic. We are researching the effect of Logan Basic Technique on length and ease of labor. We would like to ask for your help in this study. Enclosed is a questionnaire for the physician who attended the birth. This questionnaire is for you to rate the woman's birth experience based on your clinical expertise. All information will be kept completely confidential, so please answer honestly.

This research study has been approved by the Logan College Institutional Review Board (IRB). The IRB number is **SR0627080139**. The study consists of pregnant women receiving weekly chiropractic care as outlined by the Logan Basic Technique protocol. All care will be administered by licensed Doctors of Chiropractic and protocols will be monitored by the IRB.

If you have any questions, please feel free to contact **Dr. John Gutweiler**, Chairman of Institutional Review Board at 636-230-1910. Thank you for you cooperation and participation in our research study.

Sincerely,

_____
Dr. John Gutweiler

_____ _____
Neely Berry Shauna Schroeder

_____
Chad Richards

## Questionnaire for the healthcare provider who attended the birth

Case Number:_____

Thank you for taking the time to rate this woman's birth experience. This information will be kept confidential, so please answer honestly and return this survey in the envelope provided.

1. This woman's labor was _____ compared to the average labor I have attended.
   very difficult  fairly difficult  the same as  fairly easy  very easy

2. Please circle yes for any procedure that was used during this birth and no for any procedure that was not used during this birth.

| | | | |
|---|---|---|---|
| a. | Cesarean | yes | no |
| b. | Forceps | yes | no |
| c. | Vacuum Extraction | yes | no |
| d. | Episiotomy | yes | no |
| e. | Epidural | yes | no |
| f. | Analgesia | yes | no |
| g. | Oxytocin | yes | no |
| h. | Breaking the amniotic sac | yes | no |
| i. | Other:_____ | | |

3. Please estimate the length of labor according to the following definition by Kilpatrick and Laros (8). Labor onset is defined as "the time when a woman recalled regular, painful contractions every 3-5 minutes that led to cervical change." The end of labor will be defined as the birth of the baby. Length of labor in hours: _____

4. Please state the baby's APGAR scores. _____

5. Please add any additional comments:_____
   _____
   _____
   _____

## Research SOAP Note

Case Number: _____
Date: _____
Doctor: _____

**Subjective:** _____

_____

_____

_____

_____

## Objective:

HELPS – Cardinal Signs

| | Lt. | Rt. |
|---|---|---|
| H | _____ | _____ |
| E | _____ | _____ |
| L | _____ | _____ |
| P | _____ | _____ |
| S | _____ | _____ |

Other indicators used: _____

Webster Leg Check - Side of most resistance: _____

## Assessment:

AI Sacrum (L/R): _____
Other: _____

_____

## Plan:

| | | | |
|---|---|---|---|
| Hamstring Release: | Y:____ | N:____ | Side:____ |
| Piriformis Contact: | Y:____ | N:____ | Side:____ |
| Sacral Un-Lock : | Y:____ | N:____ | Side:____ |
| Apex Contact : | Y:____ | N:____ | Side:____ |
| Auxiliary Contacts : | _____ | | |
| Spinal Pressures: | Y:____ | N:____ | Levels: _____ |
| Cervical Pressures: | Y:____ | N:____ | Levels: _____ |
| Perineal Contact: | Y:____ | N:____ | Side:____ |
| Webster Technique: | Y:____ | N:____ | |

Results & Comments: _____

_____

_____

Signature: _____

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