The Effect of Logan Basic Technique on Blood Pressure and Pulse Rate in the Student Population

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Abstract

Introduction: The use of complementary and alternative medicine (CAM) is increasing in the US in recent years. Study has shown that 18% the study population visited chiropractors. It has long been suspected that chiropractic adjustment may affect the autonomic nervous system that controls short-term blood pressure. Many clinical studies have documented effectiveness of chiropractic adjustment on hypertension. However, some studies did not find significant changes after chiropractic adjustment. Therefore, more controlled randomized study is needed to expand the evidence base of chiropractic adjustment on hypertension.

This study was designed to investigate blood pressure and heart rate changes before and after a Logan Basic Chiropractic adjustment. The null hypothesis was that Logan Basic Technique adjustments would not induce positive changes in blood pressure and pulse rate.

Materials and Methods: This is a randomized controlled study. A random table was used for 100 subjects to be assigned to either the experimental (N=50) or control groups (N=50). The experimental groups (N=50) blood pressure and pulse was recorded before and after the Logan Basic adjustment. The control groups (N=50) blood pressure and pulse was recorded before and after the patient was placed in a prone position for 10 minutes. The time factor was very similar in both groups so that the comparison would only be determined by receiving the Logan Basic adjustment compared to just lying prone. The Logan Basic adjustment was determined by the use of the 5 physical signs that determine the side of the Logan Basic adjustment. The Logan Basic adjustment consisted of the Apex and Notch contacts.

Results: One-hundred students were recruited from a chiropractic college student body to participate in this study. The average age of the experimental group was 27 ± 5 years old, and the average age of the control group was 28 ± 8 years old.
The Systolic blood pressure was significantly reduced (p=0.002) with a recording before the adjustment of 111 ± 8 mm Hg and a recording of 108 ± 8 mm Hg after the Basic Technique Adjustment. The Diastolic blood pressure was reduced (p=0.083) but did not reach a significant level with a recording before the adjustment of 69 ± 7 mm Hg and a recording of 68 ± 8 mm Hg after the Basic Technique Adjustment. The Pulse rate was very significantly reduced (p=0.0002) with a recording before the adjustment of 71 ± 10 and a recording of 67 ±10 after the Basic Technique Adjustment.

**Discussion:** The current study was designed to investigate the effect of Logan Basic Technique on blood pressure and pulse in the student population at a chiropractic college. The study rejected the null hypothesis by demonstrating a significant decrease in blood pressure and pulse rate after the patients received a Logan Basic adjustment. No significant blood pressure or pulse rate changes were observed in the control group.

**Conclusion:** The present randomized controlled study of Logan Basic Technique showing a significant decrease in blood pressure and pulse rate. This study demonstrated a potential benefit of Logan Basic Technique adjusting on decreasing blood pressure and pulse rate.

**Index:** Toftness, chiropractic, blood pressure
The Effect of Logan Basic Technique on Blood Pressure and Pulse Rate in Student Population

Introduction

The use of complementary and alternative medicine (CAM) is increasing in the US in recent years.¹ Study has shown that 18% the study population visited chiropractors.¹ It has long been suspected that chiropractic adjustment may affect the autonomic nervous system that controls short-term blood pressure.² Many clinical studies have documented effectiveness of chiropractic adjustment on hypertension.³⁻⁶ However, some studies did not find significant changes after chiropractic adjustment.⁷,⁸ Therefore, more controlled randomized study is needed to expand the evidence base of chiropractic adjustment on hypertension.

It is a well known fact that hypertension is a primary risk factor for coronary artery disease, stroke, congestive heart failure, and peripheral vascular disease. It is also known that modest reduction in blood pressure of hypertensive individual’s results in a decrease risk in morbidity⁹.

The most common type of patient seen in a chiropractic office has a musculoskeletal condition such as low back pain, neck pain, or headaches. These same patients may also have pathophysiological conditions such as hypertension. There are a growing number of patients seeking chiropractic care for these types of conditions that have traditionally been considered medical problems.¹⁰

There is evidence to suggest that spinal manipulative therapy (SMT) may affect visceral function and/ or disease through the activation of somato spinal afferents. Systolic and diastolic blood pressures have been shown to significantly decrease following manipulation of the cervical spine in normotensive subjects.¹¹,¹².
It is not known if Logan Basic chiropractic adjustments affect heart rate and blood pressure (BP) changes. Because blood pressure is strongly influenced by the autonomic nervous system in daily activities\(^\text{13}\), it is interesting to investigate the interaction of the autonomic nervous system with blood pressure and heart rate on patients under chiropractic care. This study was designed to investigate blood pressure and heart rate changes before and after a Logan Basic Chiropractic adjustment. The null hypothesis was that Logan Basic Technique adjustments would not induce positive changes in blood pressure and pulse rate.

**Materials and Methods**

1. **Design:** This is a randomized controlled study. A random table was used for 100 subjects to be assigned to either the experimental (N=50) or control groups (N=50). The experimental groups (N=50) blood pressure and pulse was recorded before and after the Logan Basic adjustment. The control groups (N=50) blood pressure and pulse was recorded before and after the patient was placed in a prone position for 10 minutes. The time factor was very similar in both groups so that the comparison would only be determined by receiving the Logan Basic adjustment compared to just lying prone. The Logan Basic adjustment was determined by the use of the 5 physical signs that determine the side of the Logan Basic adjustment. The Logan Basic adjustment consisted of the Apex and Notch contacts\(^\text{14}\).

2. **Subjects:**

   **Inclusion Criteria:** Subjects from different racial, gender and age groups would be recruited in this study. Subjects that are enrolled in Logan Basic Technique class and are able to perform classroom activities can participate in this project.

   **Exclusion Criteria:** Any individual with coronary heart diseases, serious, uncontrolled hypertension or other diseases such as kidney disease were excluded from the study.
3. **Method:**

1. **Pulse Rate:** Pulse rate was determined by palpating and monitoring the radial artery with the pads of the index and middle fingers for 15 seconds and counting the amount of pulsations.

2. **Blood pressure:** Blood pressure readings were taken manually with proper technique used with a Sphygmomanometer and recorded before and after a Logan Basic Chiropractic adjustment.

3. **Statistical analysis:** All continuous data was expressed in mean ± SD. Student t test was used for comparisons of continuous variables measured in the study. Correlation is analyzed using SPSS 12 (Chicago, Illinois). A probability of <0.05 will be considered significant.

**Results**

100 students were recruited from a chiropractic college student body to participate in this study. The average age of the experimental group was 27 ± 5 years old, and the average age of the control group was 28 ± 8 years old.

The blood pressure responses before and after a Logan Basic Chiropractic adjustment in the experimental group were demonstrated in Table 1. The Systolic blood pressure was significantly reduced (p=0.002) with a recording before the adjustment of 111 ± 8 mm Hg and a recording of 108 ± 8 mm Hg after the Basic Technique Adjustment. The Diastolic blood pressure was reduced (p=0.083) but did not reach a significant level with a recording before the adjustment of 69 ± 7 mm Hg and a recording of 68 ± 8 mm Hg after the Basic Technique Adjustment. The Pulse rate was very significantly reduced (p=0.0002) with a recording before the adjustment of
71 ± 10 and a recording of 67 ±10 after the Basic Technique Adjustment. The Systolic blood pressure and pulse rate in the experimental group was significantly decreased after the Logan Basic adjustment was administered. The Diastolic blood pressure rate in the experimental group was decreased after the Logan Basic adjustment was administered, but did not reach a significant level of change. In the control group the blood pressure and pulse rate did not significantly decrease after the patients were placed in a prone position for 10 minutes in the control group as demonstrated in Table 2.

Table 1. BP and Pulse Rate Response Before and After the Basic Adjustment in the Experimental Group

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Systolic</th>
<th>Diastolic</th>
<th>Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Mean</td>
<td>111.775</td>
<td>69.734</td>
<td>71.081</td>
</tr>
<tr>
<td>Adjustment SD</td>
<td>8.372</td>
<td>7.639</td>
<td>10.854</td>
</tr>
<tr>
<td>After Mean</td>
<td>108.959</td>
<td>68.183</td>
<td>67.612</td>
</tr>
<tr>
<td>Adjustment SD</td>
<td>8.356</td>
<td>8.552</td>
<td>10.207</td>
</tr>
<tr>
<td>T</td>
<td>0.0028</td>
<td>0.0839</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

Table 2. BP and pulse rate response Before and After the Basic Adjustment in Control Group

<table>
<thead>
<tr>
<th>Control Group</th>
<th>Systolic</th>
<th>Diastolic</th>
<th>Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Mean</td>
<td>120.244</td>
<td>75.306</td>
<td>69.102</td>
</tr>
<tr>
<td>Adjustment SD</td>
<td>7.72</td>
<td>7.101</td>
<td>6.646</td>
</tr>
<tr>
<td>After Mean</td>
<td>120.04</td>
<td>75.02</td>
<td>68.816</td>
</tr>
<tr>
<td>Adjustment SD</td>
<td>7.783</td>
<td>7.383</td>
<td>5.829</td>
</tr>
<tr>
<td>T</td>
<td>0.374</td>
<td>0.146</td>
<td>0.266</td>
</tr>
</tbody>
</table>
Discussion

The current study was designed to investigate the effect of Logan Basic Technique on blood pressure and pulse in the student population at a chiropractic college. The null hypothesis was that the Logan Basic chiropractic adjustment had no effect on blood pressure and pulse rate. The study rejected the null hypothesis by demonstrating a significant decrease in blood pressure and pulse rate after the patients received a Logan Basic adjustment. No significant blood pressure or pulse rate changes were observed in the control group.

The results of this study were consistent with previous studies on the effect of chiropractic adjustment in patient with hypertension. Favorable results have been achieved by other chiropractic procedures such as the use of sacro-occipital cranial technique in a case report involving 3 cases of hypertension with the main emphasis on cranial ranges of motion\textsuperscript{11}.

Other studies have been done to determine the feasibility of conducting a randomized clinical trial in a private practice setting that examined the short and long -term effects of chiropractic adjustments for subjects with hypertension. This pilot study determined several procedural issues that needed to be addressed before a full-scale clinical trial could be completed even though the study did not find a significant blood pressure changes after adjustments\textsuperscript{7}.

The present study has some limitations. The most obvious was that students were performing the blood pressure and pulse rate recordings, however these students have been trained in taking blood pressure and pulse in a physical diagnosis class at a chiropractic college. The second limitation was that the study population was not hypertensive\textsuperscript{15, 16}. These limitations will be addressed in the future study.
In conclusion, the present randomized controlled study of Logan Basic Technique showing a significant decrease in blood pressure and pulse rate. This study demonstrated a potential benefit of Logan Basic Technique adjusting on decreasing blood pressure and pulse rate.
Reference:


