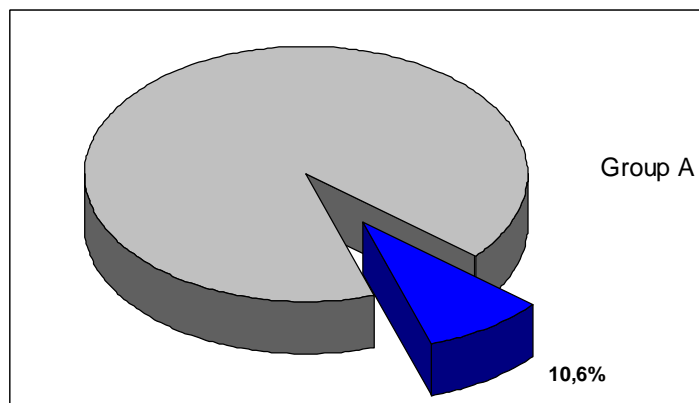


Student:
Walter Krasser D.O.
Davidgasse 4
8010 Graz

THESIS

THE DECREASE OF HIGH BLOOD PRESSURE USING A LATERAL FLUID DRIVE TECHNIQUE WITH CONCENTRATION ON THE OSSA TEMPORALIA



I thank my wife for her mental support and understanding while writing this theses. Many thanks to Hanneke Nusselein, D.O. who guided me through all difficulties. A special thank to Beatrice Freund who translated my theses carefully from German into English. Graz, April 2000; Graz, December 2005

Table of Contents

1	INTRODUCTION	4
1.1	HYPOTHESIS	6
2	ANATOMICAL AND PHYSIOLOGICAL BASICS	6
2.1	BONE FACTORS	7
2.1.1	<i>Os Temporale</i>	8
2.2	MEMBRANOUS FACTORS.....	9
2.2.1	<i>Dura mater (Parchimeninx)</i>	9
2.2.2	<i>Arachnoidea and Pia Mater (Leptomeninges)</i>	11
2.3	THE LIQUOR.....	11
2.4	NEUROLOGICAL FACTS	13
2.5	ARTERIAL BLOOD PRESSURE AND BLOODPRESSURE-REGULATION	14
2.5.1	<i>Hypertension in the Arterial Circulation</i>	16
3	FLUID DRIVE TECHNIQUE, GENERAL REFLECTION	17
3.1	POSSIBLE EFFECTS OF THE LATERAL FLUID DRIVE TECHNIQUE	20
4	THE TECHNIQUE OF TREATMENT	21
5	METHODOLOGY	22
5.1	THE DEFINITION OF THE GROUPS	23
5.2	THE TRIAL ARRANGEMENT FOR GROUP A.....	23
5.3	THE TRIAL ARRANGEMENT FOR GROUP B.....	24
5.4	PLACEBO VERSUS NON-TREATMENT	24
5.5	THE MEASURING INSTRUMENT.....	25
5.6	POSITION OF THE TEST- AND THE TREATING PERSON	26
5.7	THE HANDHOLD.....	26
5.8	THE REALISATION.....	27
6	RESULTS OF THE STATISTIC EVALUATION	28
6.1	GROUP A	28
6.2	GROUP B	29
6.3	RESULTS IN GROUP A.....	30
6.4	RESULTS IN GROUP B.....	32
6.5	IN COMPARISON	35
7	DISCUSSION	36
7.1	IN CONCLUSION	38
8	REFERENCES.....	38
9	LIST OF PICTURES.....	40
10	SUPPLEMENT.....	41
10.1	RESULTS IN DETAILS.....	41
10.2	RESULTS OVERVIEW.....	55
10.3	QUESTIONNAIRE	56
10.4	FAX	57

1 INTRODUCTION

While studying Osteopathy at the Vienna School of Osteopathy we were listening to lectures about contraindications which may touch us in our osteopathic work. One of those contraindications, among all the others like tumors, osteoporosis or working directly at inflamed areas, was doing work with clients that presented increased or high blood pressure. During that lectures and several discussions with physicians and colleges we were confronted with different limits within we are allowed to work, or on the opposite, when we are instructed to send the patient directly to the doctor.

Everyone who works with people in the medical field knows very well that increased or definitely high blood pressure is a very common disorder. So even before I was looking for a topic which might be interesting on the one hand and practicable on the other, I often wondered what to do with clients which show increased blood pressure during the treatment. Are there any possibilities to decrease it, so that the therapy could be continued?

After having rejected different subjects which seemed to be too difficult to work out in my private practice, I had a discussion with Bernard Lignier D.O. In the course of this conversation he told me that he knows a possibility to influence the blood pressure by using a bilateral temporal technique, but he did not know, whether there was written down anything about that topic. At that point I decided to go more deeply into that subject. I tried to obtain information, whether there exist studies or articles which have generally reference to osteopathy and high blood pressure and specifically osteopathy in the cranial field. The search in the Internet, an inquiry to the American Academy of Osteopathy and several osteopaths in Europe and America brought very poor results.

There were a few references to hypertension, but no definitive study to which I could refer to or could read in. As one of the few mentions I found in „Osteopathy in the Cranial Field“¹ a short remark that lateral Fluctuation is a possibility to decrease increased blood pressure. In an article² from 1950 also written by H.I.Magoun I could find some remarks about hypertensive states such as hypertension in the arterial circulation.

So I decided to pick up that subject and try to answer the question whether it is possible to reduce high blood pressure by application of a bilateral cranial technique on the temporal bones.

During the next weeks I tried to find out which techniques and in which way applied they would bring the best success. First I tried to work from the cranial-structural side with my patients, whose diagnosis, among others, was a high blood pressure. At this time my intention was to get the both Temporalia free by applying structural techniques and the to rotate the bilateral symmetrically. The success with this method was quite unsatisfactory, although in some cases the blood pressure was decreased. The fact that changes are possible but the amount of decrease was not very high was evidence for me that a structural correction itself was not efficient enough.

A deciding factor that it could be possible to make the decrease of blood pressure by osteopathic techniques a subject of my dissertation, were on the one hand the first training parts in „Biodynamic Cranial Osteopathy“ by J. Jealous and in the following some discussions with Mrs. Hanneke Nusselein D.O. In the seminars and during discussions my attention was drawn several times on the great influence of fluid drive techniques on the

¹ Osteopathy in the Cranial Field , 1997 [8]

² The Cranial Approach to the Cardiovascular Renal Syndrome, 1950 [9]

human body.

To go further into this subject and into the right appliance of fluid drive techniques it was necessary to find the right literature and get myself into it. „Contributions of Thought“³ and „Life in Motion“⁴, helped me to get a feeling for the cranial work in the field of fluid drive techniques. They allowed me to have a glance on Sutherland’s and Becker’s way and philosophy of working. Those two pioneers in the field of Cranial Osteopathy thought about things which are still valid today as the further work of J. Jealous shows.

1.1 Hypothesis

My hypothesis was to prove the usefulness of a cranial fluid drive technique to decrease high blood pressure.

Within the framework of the following pilot study I tried to find and to prove my cranial osteopathic way of decreasing increased blood pressure values. In this connection only the proof that the used technique results in a decrease of blood pressure was of importance for me. How long the possible decrease would last was not important for me in this study. The duration of the improvement, probably would be a subject for further studies.

2 ANATOMICAL AND PHYSIOLOGICAL BASICS

(Mainly from “Benninghoff Anatomie”[3],[4] and “Physiologie des Menschen”[13] “Harrisons

³ Contributions of Thought, 1998 [14]

⁴ Life in Motion , 1997 [1]

As far as for the right appliance of the treatment-technique the inner- and outer- membranes and the Liquor Cerebrospinalis are mainly important, I would like to make the description of the bone details in the area of the Cranium (Fig.1) as short as possible. This also contributes to the fact that the bones, in this case the both Ossa Temporalia, are more or less contact-mediums, resp. spatial leads in order to feel the processes in the head during the treatment.

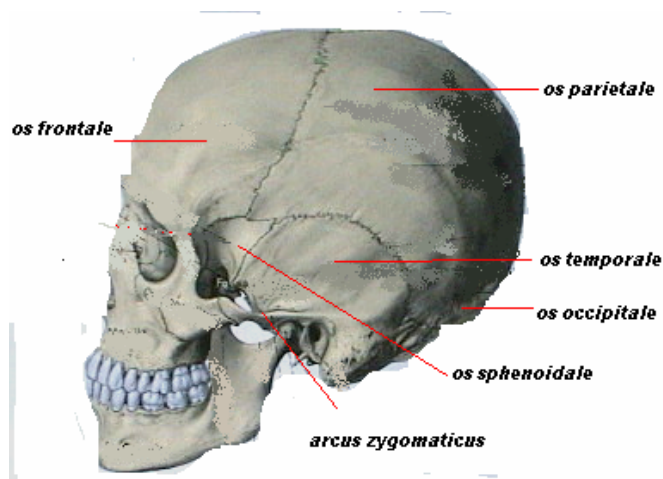


Fig. 1 Cranium, lateral view (BENNINGHOFF [3] p.478)

2.1 Bone Factors

The skull consists of the following bone parts:

At the base of the skull (Fig.2) in the Pars Posteriore is located the Os Occipitale and ventrally - connected by the Synchondrosis Sphenobasilaris - the Os Sphenoidale. On the left and right side of it are the both Ossa Temporalia, to the cranial side the both Ossa Parietalia close the cranium. To the anterior side borders the Os Frontale.

From a more precise description of the facial part I will abstain

and would like to limit the description to the Ossa Temporalia as primary contact-bone.

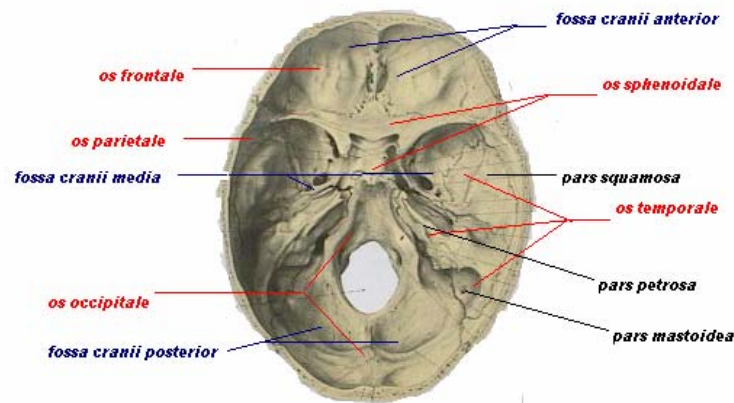


Fig. 2 Fossa cranii interna (BENNINGHOFF [3] p.484)

2.1.1 Os Temporale

At grown-ups the Os Temporale consists of the Pars Squamosa, the Pars Petrosa and the Pars Mastoidea and is involved in the formation of the mid skull hollow.

The Pars Squamosa carries on the exocranial side (Fig.3) the Processus Zygomaticus, which is connected anterior to the Os zygomaticus and forms together with it the Arcus Zygomaticus. Caudal of the origin-area of the Prozessus Zygomaticus the socket for the lower jaw-condyle is located. Cranial of the origin-area extends the Squama. The Margo Sphenoidalis anterior forms the boundary to the Os Sphenoidale. Via the Margo Parietalis the Squama cranial is connected with the Os Parietale.

Endocranial (Fig.4) the Pars Squamosa is connected with the Lobus Temporalis and the branches of the Arteria Meningea media.

The Pars Petrosa forms together with its Margo Superior the

boundary between the middle and back skull-hollow. At this edge of the four-sided pyramid the Tentorium Cerebelli has its origin. In the Pars Petrosa the inner ear is located, which contains the Cochlea as organ of hearing as well as the three Canales Semicirculares as organ of equilibrium. Sensory information from the Cochlea are transmitted by the Nervus Cochlearis to the central nervous system. The Nervus Vestibularis as well a sensory nerve, conducts the stimuli from the vestibule organ (arcades, Utriculus, Sacculus). That nerve consists of afferent fibres responsible for the muscle tonicity, the equilibrium and posture. The top and the fore edge of the pyramid are connected to the Os Sphenoidale. On the back side borders the Os Occipitale. The Pars Mastoidea is part of the back skull hollow. Posterior it contacts the Os Occipitale and superior the Os Parietale. On the inner side the connection to the Sinus Sigmoides is located.

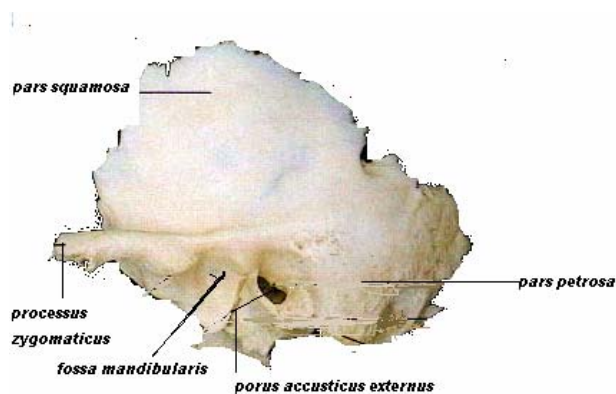


Fig. 3 Os temporale, external view (SCHATTAUER [11] p.31)

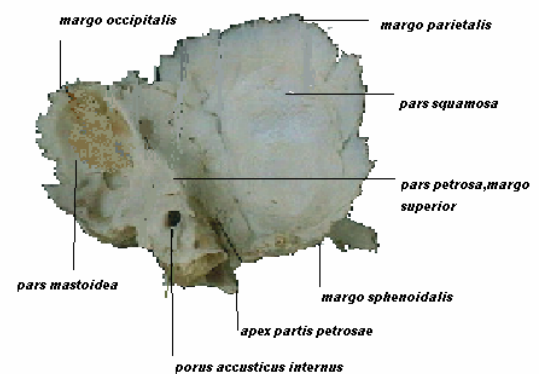


Fig. 4 Os temporale, internal view (SCHATTAUER [11] p.30)

2.2 Membranous Factors

2.2.1 Dura mater (Parchimeninx)

The cranial bones are covered inside and outside by the Periost which is equivalent to the outer lamina of the Dura Mater. On this layer inside the meningeal Dura is put on. Those two layers together are commonly called Dura Mater, which is a non elastic membrane. The inner layer at certain points has runners, which build the intracranial membranes (Fig.5). Horizontally running spreads the Tentorium and vertically the Falx. In these Dura duplicates are running the Sinus Venosi (Fig.5) as the venous system of the head.

The Tentorium Cerebelli which separates the cerebrum from the cerebellum has a big circumference. It starts at the Protuberantia Occipitales Externa follows on both sides to the Sulcus Transversus and Sigmoides, sticks to the upper edge of the Pars Petrosa of the temple bones and is finally fixed at the Processi Clinoidei Posteriores. The small circumference, the loose margin of the Tentorium with its origin at the Processi Clinoidei Anteriores, keeps an opening clear for the passing of the cranial trunk.

The Falx Cerebri separates the two hemispheres of the cerebrum. It runs from its base at the Crista Galli of the Os Ethmoidale along the Crista Frontalis and the Sutura Sagitalis on to the Protuberantia Occipitalis Interna.

The lower edge goes along the Corpus Callosum. The Falx Cerebelli forms caudal a prolongation and separates the both hemispheres of the cerebellum. Its top is fixed on the back edge of the Foramen magnum.

As another Dura-layer the Diaphragma Sellae should be mentioned which has a hole in the middle for the passing of the pituitary stalk.

2.2.2 Arachnoidea and Pia Mater (Leptomeninges)

The Arachnoidea puts itself as fibrous connective tissue, like a spider's web, against the Dura Mater. It bridges the furrows and wrinkles of the brain. The Pia Mater, as the innermost layer of the cerebral membranes, on the other hand follows the shapes of the brain-surface. This fine cell layer, because of its good vascular supply helps to provide the nutrition of the brain substance.

Between the Arachnoidea and the Pia Mater the Subarachnoidal area is located which is filled up with Liquor Cerebrospinalis. The Arachnoidea, in the area of the Sinus Sagittalis superior penetrates the Dura Mater and forms the Granulationes Arachnoideae (Paccioni). They are the drains for the Liquor from the Subarachnoidal area to the venous circulation. Vessels of the Pia Mater form in the ventricles the Plexus Choroidei, which are responsible for the production of the Liquor. The Granulationes Arachnoideae and the Plexus Choroidei are together a part of the blood-brain-barrier.

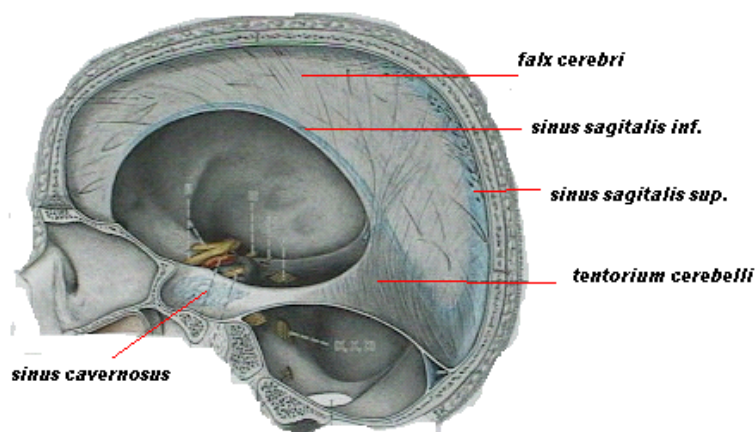


Fig. 5 Tentorium and Falx (BENNINGHOF [4] p.349)

2.3 The Liquor

The brain ventricles, the central spinal cord canal and the Subarachnoidal area contain the Liquor Cerebrospinalis. As a

hydrodynamic buffer he adsorbs and distributes forces which effect on the brain and the spinal cord from inside or outside. The buoyancy of this liquid supports the brain and decreases its weight.

Tasks which in the other tissues are done by the lymph, are taken over in the area of the central nervous system by the Liquor. It contains among others antibodies, lymphocytes and immunoglobulins. It is responsible for the nutrition of the nervous cells as well as for the disposal of the cell waste. The Liquor not only contains vitamins, amino acids and Ions, but also supports the transport of hormones from the hypothalamus and the back-lobes of the hypophysis to the body or the brain substance. Because of its ionic composition the Liquor can be compared with the liquid in a battery and plays therefore an important role within the scope of the electromagnetic function of the brain.

As a part of the blood-brain-barrier it participates in the selective substance exchange between the blood and the nerve tissue.

The Liquor is produced mainly in the Plexus Choroidei of the ventricle system (Fig.6). As a second source the intercellular space⁵ of the brain should be mentioned, in which 30% and more of the whole Liquor quantity is produced. From the side-ventricles the Liquor flows through the Foramina Interventriculare (Monroe) to the III. Ventricle, from there through the Aqueducts Cerebri (Sylvius) to the IV. Ventricle. Through the Foramen Magendii the Liquor moves to the Cisterna Magna and from there on to the spinal Subarachnoidal space. He follows the peripheral nerves and is at last adsorbed in the connecting tissue. Therefore the Liquor is connected via the lymphatic system with the whole body.

Through the Foramina Luschkae the Liquor flows from the IV. ventricle into the Cisterna Basalis. It laps around the hemispheres

of the cerebrum to be re-adsorbed - in the Sinus Sagitalis Superior via the Granulationes Arachnoidales (Paccioni) - in the venous blood circulation.

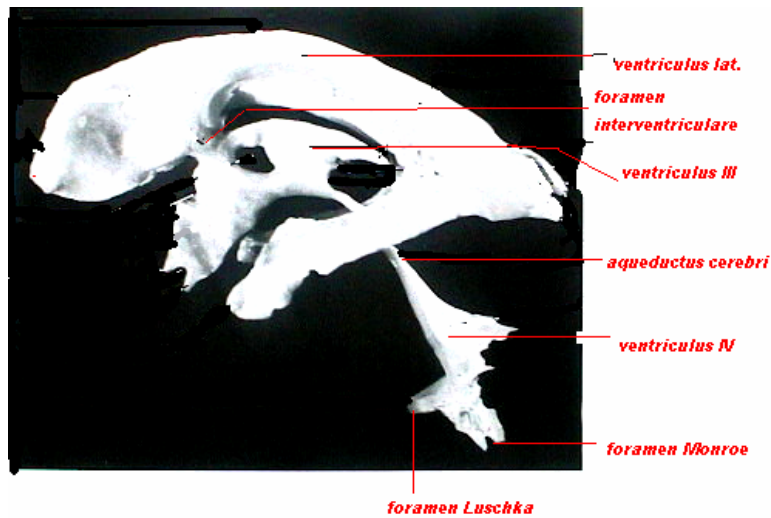


Fig. 6 Ventricle system (SCHATTAUER [11] p.110)

2.4 Neurological Facts

In the field of the neuro-anatomy I would like to reduce the description to those structures which are directly related to the applied cranial osteopathic technique. The ventricle system, the

⁵ BENNINGHOFF, 1994 [4]

Hypothalamus, the medulla Oblongata with its brain-nerve-nuclei and the vestibular organ should be mentioned.

In the III. ventricle the close interplay between the Liquor and the neuro-anatomical structures is evident. The side wall of the III. ventricle is built cranial by the Thalamus and caudal by the Hypothalamus. The Hypothalamus controls the vegetative-endocrine processes like, for example, Heart, circulation and respiration. On the hormonal side - by releasing of Vasopressin and Oxytozin to the blood circulation - it influences the endocrine function of the back-lobes of the Hypophysis. Here the Vasopressin is stored and will be - as required - released to the target organ the kidneys.

In the area of the Medulla Oblongata the so called circulation centre is located. Of great importance are here the Nuclei solidarii and the ventrolateral Medulla.

In the Nucleus Solidarius, afferent impulses from peripheral blood pressure-receptors, which are conducted via the IX. and X. brain nerve, are transformed and integrated. The Nucleus Solidarius also sends obstructive neurones in the direction of the Nucleus Intermediolateralis. They reduce at their activation the Sympathicotonus and therefore decrease the blood pressure and the peripheral vessel-resistance.

2.5 Arterial blood pressure and bloodpressure-regulation

Generally can be said that the arterial blood pressure is the pressure in the arterial vascular system, which enables that all

body systems are supplied with enough blood at any time.

Thus is guaranteed, that in any cell of the human body the homeostasis can be maintained. This maintenance is monitored by several regulation-mechanisms and centres.

Sudden changes are realised first of all by nervous-triggered vasoconstrictorial changes such as presso-respectively strain-receptors reflexes in the large carotid- and thorax arteries (baro-receptors in the aortic arch and carotid sinus). In case the receptors are excited beyond a certain set value the afferent fibres in the receptors cause, among other things, a stanch of the sympathetic centres in the *Medulla Oblongata* but also cause an excitement of the parasympathic centres and therefore a decrease of the blood pressure by decreasing the vasomotoric tonus. Similar reactions appear, if in the two atria of the heart - by a passive strain - afferent impulses of the *B-receptors* are carried via sensible fibres of the n. vagus to the medullar circulation centres.

A stimulation of the symphatic nervous system causes - depending on the state of excitement- a release of Adrenaline and Noradrenaline from the adrenal marrow. During a strong release of these hormones the excitement of the α - receptors in the vessel-muscular-system cause an increase of the flow resistance in the vessels and therefore an increase of the blood pressure. Another regulating mechanism is the Renin-Angiotensine-system. If the Renin, produced and saved in the kidneys - in case of a

circulatory problem in the kidneys either caused by blood pressure decrease or by *vasoconstrictorial* reaction in the kidney vessels - is released, first Angiotensine and supported by an enzyme Angiotensine II is produced. Those hormone leads to a strong vasoconstrictive reaction and also effects the central sympathetic

structures.

Long term regulation mechanisms mainly occur on account of an influence on the liquid volume in the vessels. In this case the passing of liquid via the nephrites and the change of the cardiac-time-volume are of main importance. Hormones which are important for the resorption of liquids are ADH, the anti-diuretic hormone and the Aldosteron which is closely linked with the effects of Angiotensine.

Central control mechanisms are located in the *Medulla Oblongata* and here mainly in the *Formatio Reticularis* and the *Pons*. From here the tonus of the vessels is controlled by sympathetic impulses. A too strong excitement of the cardiovascular receptors leads to a decline of the vasokonstrictorial activity and to an increase of the vasodilatoric reactions. Apart from the effects to the tonus of the vessel muscle-system there also exist sympathetic and parasympathic influences to the heart.

Segments in the Hypothalamus have priority over the medullar centres and those segments continuously control the tone activities in the lower areas even in resting phases. A stimulation of the posterior Hypothalamus segments effects an increase of the sympathetic activity, which makes the blood pressure, the cardiac-time-volume and the cardiac frequency higher. On the other hand a stimulation of certain anterior Hypothalamus-segments leads to an attenuation of the cardiovascular system. Areas of the cerebral cortex in the zone of the motoric segments and on the basal surface of the Front- and Parietal-lobe can also influence the blood pressure and the heart frequency.

2.5.1 Hypertension in the Arterial Circulation

Values of blood pressure which are higher than the so called norm are described as Hypertension.⁶ According to the latest level of knowledge of the WHO (World Health Organisation), it is referred to hypertension, if the systolic value is long term higher than 140 mmHg and (or) the diastolic value is higher than 90 mm Hg. (By definition we call it hypertension if one of the two values or both values are increased.)

Depending on the kind of disorder we make a distinction between different forms of hypertension. In case the peripheral resistance in the vessels is chronically too high we call it resistance - hypertension. In case of an increase of the cardiac-time volume the systolic blood pressure rises - this is a volume-hypertension. Essential hypertension includes among others the following causes: genetic factors, stress factors going along with a hyper activity in the Hypothalamus and the Medulla Oblongata, as well as disorders in the Renin-Angiotensin-Aldosterone-system with higher Renin values in the blood.

Different forms of hypertension, which are linked to disorders in the parenchyma of the kidneys or the kidney arteries belong to the symptomatic hypertension. High blood pressure caused by endocrine disorders and cardiovascular diseases also rank among this category.

3 FLUID DRIVE TECHNIQUE, GENERAL REFLECTION

Fluid Drive Techniques are ways of treatment which use the Potency, the electromagnetic power, in the Liquor Cerebrospinalis as a main factor of treatment. Here I would like to quote from the book "Osteopathy in the Cranial Field" written by H.I. Magoun, 1.

⁶ Pschyrembel Klinisches Wörterbuch, 1990 [10]

Edition. He describes the statements of Still and Sutherland, which refer to the Liquor (Cerebrospinal Fluid): " *It is the HIGHEST KNOWN ELEMENT in the human body and as such is the recipient of the life principle.*

*Sutherland variously describes this invisible element as < **the fluid within a fluid**>, <**the liquid light**>, <**the juice in the electric battery**> or <**the sheet lightning cloud**>.....<**the electrical potential which builds up the space between the central conductor or wire of a coaxial cable and the copper tube on the outside.**>It fluctuates...and may be directed to assist in the release of ligamentous and membranous...strains by virtue of its intelligence and potency."⁷*

In general can be said that Fluid Drive Techniques can have a big influence on vegetative systems and processes supporting the healing procedures in the human body. Viola M. Frymann mentions some possibilities of using these techniques in the daily treatment in her article "*Cerebrospinal fluid motion*"⁸ V.M. Frymann, DO mentions among others the following effects:It is possible by Fluid Drive Techniques to force a drainage of the lymph from oedema and traumatic areas of the body. The same way a fever decreasing and healing effect can be proved. Reduction of allergic reactions, interruptions of asthmatic attacks support of passing off toxic substances from the body systems are other indicators for the application of the Fluid Drive Techniques. One of the sources which refer to my subject of arterial high blood pressure and lateral Fluid Drive Techniques is H.I. Magoun. He writes in his book „Osteopathy in the Cranial Field“ in the chapter about lateral fluctuation on page 87, under „a. Indications...2.) Physical states such as hypertension, spasm of

⁷ Osteopathy in the Cranial Field, 1997 [8]

⁸ Cerebrospinal fluid motion [5]

the cerebral arteries, hypertonicity, headache, grand mal, petit mal, etc.“⁹

In 1950 Anne Wales, D.O. wrote an article¹⁰ where she describes the reactions and systemic effects of cerebro-spinal-fluid. In this article she mentioned how rapidly changes take place if we treat someone whose body is in extreme imbalance, for example high blood pressure, using lateral fluid fluctuation.

Edith E.Dovesmith, D.O.¹¹ also mentioned indications to use the fluid fluctuation to treat hyperthyroidism toxemias of infections or hypertension. I found it very interesting when Dovesmith wrote that a chronically increased sympathetic tonus, i.e. hypertension, is a sign of our century. Enormous changes in economic and social conditions, stress at work etc. lead to an overstimulated sympathetic state of the body and illness is one of the results.

While using the Fluid Drive Techniques, like the name already describes, happens an orientation of the liquors via the middle line from left to right etc.

By the intention of the therapist, the fact that to the cranial system of the client is offered a new Fulcrum, changes the longitudinale fluctuation along the facies-system, for a certain time, into a lateral fluctuation. From that point, under the condition that the therapist and the patient are well synchronized¹², the liquor can start his therapeutic work.

⁹ Osteopathy in the Cranial Field, 1997 [6]

¹⁰ The Management, reactions and systemic effects..., 1950 [15]

¹¹ Fluid Fluctuation and the Autonomic System, 1950 [2]

¹² Synchronisation of the patient and the therapist should always stand at the beginning of any treatment so it is the precondition of any osteopathic work.(remark of the author)

3.1 Possible Effects of the Lateral Fluid Drive Technique

The effect which should be achieved, is the lowering of the Sympaticotonus and as a result the decrease of blood pressure. This could be achieved by opposite rotation of the Ossa Temporalia which causes a change of tension in the Tentorium and as a consequence causes a change in the Liquor-flow. The changed hydrodynamic power could arise a stimulation in the area of the ventricles. As it was mentioned before the Hypothalamus is part of the wall of the 3rd ventricle. The influence of the Hypothalamus as the head of the autonomic nervous system on one hand and his hormonal function on the other hand might be another mechanism to provoke changes in blood pressure. A stimulation in the 4th ventricle can influence the Nervus Vagus, respectively the Vagus-Solitarius-Complex.¹³ Possible tensions in the area of the Foramen Jugulare could influence the X. brain nerve at his exit-point, either in the afferent or the efferent information. An explanation by the „Biodynamic Cranial Osteopathy“ of James S. Jealous D.O.¹⁴ could be that, the electromagnetic power (potency) in the Liquor Cerebrospinalis effects a harmonisation in the field of tension between Sympathicus and Parasympathicus. This meets the primeval endeavour of the human body to restore the Orthostasis.

The VIII. brain nerve, Nervus Vestibulocochlearis, its nuclei are also located in the Medulla Oblongata, influences via the above mentioned Vestibular-organ¹⁵ the muscle tonicity. There exists a connection between the nuclei of the 8th brain nerve and the

¹³ Benninghoff, 1994 [4]

¹⁴ Biodynamic Cranial Osteopathy [6]

¹⁵ Netter, 1987 [7]

Formatio reticularis in the brain stem. The formatio reticularis is part of the activating system of the body so it influences for example the heart frequency and blood pressure. It is conceivable that also the cardiac muscle could be influenced this way.

4 THE TECHNIQUE OF TREATMENT

The technique which I am using to decrease blood pressure, has its roots in the field of cranial osteopathy and here on the one hand from the area of the Fluid Techniques. This is a cranial-osteopathic treatment-method, using the „Potency“ of the Liquor Cerebrospinalis to influence the Hypothalamus, the neurological centres around the third ventricle and the physiologic centres in the area of the Medulla Oblongata, actually at the bottom of the fourth ventricle. This, on the one hand causes a change locally in the cranium and on the other hand, by stimulating the cranial-nerve-nuclei an effect on the rest of the body and its organic systems.

This treatment technique also consists of a part, which I would call structural. In this case the transmission of the treatment-impulse goes via the skull bones to the intra-cranial membranes (cerebral membrane, Falx Cerebri, Tentorium Cerebelli) and in this connection the regulating centres in the cerebral stem and the hypothalamus are influenced. Those physiological links are the reason why I am using this technique. **Dr. J. Jealous responded to my request by fax¹⁶ that using the Lateral Fluid Drive Technique leads to a decrease of the Sympatico-tonus and**

¹⁶ Copy of the fax in the supplement (10.4)

therefore to a possible harmonisation of the blood pressure conditions.

An exact description of the possible effects which can be set off by this treatment technique, is made in that chapter of my study where I deal with the anatomic and physiological fundamentals.

5 METHODOLOGY

For the proof of the efficiency of the used Fluid Drive Technique two groups of test persons, which further will be called **>A<** and **>B<** are necessary. Every single member of both groups has to show an increased blood pressure. Whereas as a guide number a systolic value of more than 140 and (or) a diastolic pressure of 90 and higher should exist. For my examination it is not absolute necessary that the test person only participate with the diagnosis „Hypertension“ made by a physician. There is also the possibility that during the first examination respectively during the first history in the daily work, at a test person is found a higher blood pressure value. In this case I take over the client in one of the two test groups.

The selection of the test persons and the allocation to one of the examined groups is done according to the following guidelines:

The test persons have to be between 30 and 70 years old.

The allocation in the test group happens by chance. This means, the first person who is willing to participate in my study will be placed in group A. The next volunteer is placed in group B etc. None of the test persons know in which group they are allocated.

Insisting on a certain ratio between female and male test persons in the groups seems not relevant for the result of the examination. Disorders already existing and influencing the blood pressure are registered in a questionnaire, but will not be taken into account as important in my end statistic.

5.1 The Definition of the Groups

The test group with the letter A is that group consisting of 13 persons who is treated in the trial with the Fluid Drive Technique. Group B, 12 persons, is in my trial concept the control group, in which are, like in group A carried through two pressure measurements, but those persons are not treated. They are only touched for a few minutes at their legs and in the area of the forefoot. Important is my intention not to receive any therapeutic effect.

5.2 The Trial Arrangement for Group A

The candidates of group A have to lay down on my therapy bed for about ten minutes. After this period I make the first blood pressure reading, using a digital sphygmomanometer, description see below. The value is written down on the form of the test person. After that, I use the Fluid Drive Technique, as already described. Following that the second reading is done. The value is again noted on the form. The difference between the blood pressure value before and after using the Technique is showing subsequently the evidence for practicability of the Fluid Technique.

Test person rests 10 Minutes on his back	First measurement	Technique	Second Measurement
--	-------------------	-----------	--------------------

Schematic of the measurement process for candidates of trial group A

5.3 The Trial Arrangement for Group B¹⁷

Like group A, also the test persons for group B have to rest for ten Minutes on the therapy table. In the following I place myself at the bottom of the bed and touch, without carrying through any treatment technique, the forefoot of the candidate. Of great importance is, and I repeat this once more that I do not have any intention to influence the Body-system of the test person.

After some minutes I once more read the blood pressure. The second value and the value received before should -according to my hypothesis - not or only differ a little from each other.

Schematic of the measurement process for candidates of trial group B (Control-group).

The results of the measurements in both groups are verified on the spot by Dr. Karl Hasiba, general practitioner.

5.4 Placebo versus NON-treatment

Test person rests 10 minutes on his back	First measurement	No Technique	Second Measurement
--	-------------------	---------------------	--------------------

At that point the question could arise, why I choose a placebo treatment for my control group and not the possibility of applying no technique to the probationers. Because of the fact that no probationer of both groups knew in which group she (he) was and

¹⁷ Because of moral reasons all members of group B naturally were treated after the 2nd measurement.

which kind of technique would be applied, they all thought that they are treated when I touched them either on the head (group A) or at the feet (group B). My choice using a placebo treatment for my control group is mainly based on the fact that touching people is the main thing in my practice. So even doing a placebo treatment is more similar to my daily work than not to touch the people or doing nothing. Using the NON-treatment version would have been much easier for me according to time and concentration, but I think that my choice was the best for the members of my study and for me. One negative effect of touching the probationer of the placebo group is the influence of the self healing mechanism of the body on blood pressure data. The statistic evaluation of all data of group B shows that this negative influence did not appear.

5.5 The Measuring Instrument

The reading of the blood pressure at all test persons is done with a digital sphygmomanometer of *Boehringer Mannheim*, Type *Rivatest uno SN 768 00 182166*. On the display the systolic and the diastolic blood pressure as well as the pulse rate is shown.

The pressure sleeve is always placed on the right upper arm, without taking care of a possible influence on the blood pressure by an obstructive event, for example in the area of the shoulder line. This handling is in accordance with my guidelines for this study, to show only the efficiency of the Fluid Drive Techniques, without deeply searching for reasons of the disorder.

5.6 Position of the Test- and the Treating Person

The candidate lies relaxed on his back on the therapy bed. The therapist is sitting at the cranial end of the bed behind the patient. It is important for the patient as well as for the therapist to be in a relaxed position. The therapist has to pay attention to the fact that he has enough space to lay the forearms on the bed in order to take through the technique in an adequate way.

5.7 The Handhold

Taking up contact with the head of the patient is done bilaterally with variant of the 5-finger technique in the area of the Ossa Temporalia. The middle finger of each hand is placed in the outer auditory canal of the left and right ear. The index finger and the thumb grasp with a flat „tweezers“ movement the cheekbone-bow, the ring finger and the little finger are placed flat on the Mastoid with the fingertips in direction to the Processus Mastoideus.



Fig. 7 Handhold looked at from sidelong behind at the anatomical structures (described above)



Fig. 8 Handhold from the left side

5.8 The Realisation

The objective of the technique is a change in fluctuation of the Liquor Cerebrospinalis in a lateral direction. This is realised by the use of above described handhold and counter-rotating of the both temples, whereby on the one hand - via the Pars Mastoidea and the cranial movement of the Processus Zygomaticus a kind of inner rotation of the bone, along the longitudinal axis of the Pars Petrosa - is stimulated. On the other hand by intention of a pressure on the Processus Mastoideus and a caudal-lateral movement of the Processus zygomaticus a kind of outer rotation of the Os temporale is implemented.

As a result of this the alternate rotation in the area of the Partes Petrosae causes a sufficient twist¹⁸ of the Tentorium Cerebelli to initiate a lateral fluctuation of the Liquor Cerebrospinalis.

After some fluctuation cycles from left to right and the other way round, I withdraw from the active part of the treatment technique and wait for an answer, i.e. a reaction of the cranial system. It comes to a slow down of the lateral Fluid movement up to a stage where no movement can be realised anymore, neither in the sense of a lateral, nor longitudinal fluctuation.

After a while, the turnaround period at this stage varies from one human being to another, the body again initiates a longitudinal movement. I follow this movement in the inspiration phase of the system to the rest point and feel, except of the ideling of the mechanism no more movement. At this stage I wait again, until the

¹⁸ Osteopathy in the Cranial Field, 1997, p.88

body starts with a slow, smooth, longitudinal movement. From this point I draw back my hands from the head of the patient and terminate the technique of treatment.

6 RESULTS OF THE STATISTIC EVALUATION

The guideline for the study was my claim, that I can achieve a significant improvement of increased blood pressure values, by onetime using of the described Technique.

The results of my study, I would like to split according to the following criteria:

6.1 Group A

Evaluation for each test person (comparative data in mmHg and percentage)

- Comparison of the systolic pressure before and after the treatment technique
- Comparison of the diastolic pressure before and after the treatment
- Comparison of the arterial middle-pressure before and after treatment

Interpretation for the whole group

- Alteration in % of the systolic pressure
- Alteration in % of diastolic pressure
- Alteration in % of the arterial middle-pressure

6.2 Group B

The interpretation of group B, i.e. the deviation in % of the control group, is done according to the same criteria as for the treated group.

Comparative reflection on the treated group and the control group. Here my hypothesis should be proved, that by applying of the Fluid Technique to the candidates of Group A, it comes to a significant decrease of the arterial blood pressure, whereas in the control group only minimal deviations are recognised.

For the better understanding of the following charts, it is necessary to give a short explanation of the used abbreviations.

- **A or B:** name of the groups
- **1,2,3,...:** sequence of the candidates in the group

For example, „ Probationer A1“ is the first candidate in the treated

group

- „**Syst. pre.**“ and „**Diast. Pre**“: systolic and diastolic pressure of the first measurement.

- „**Syst. post**“ and „**Diast. post**“: systolic and diastolic pressure of the second measurement.

-„**Art. Press.**“: description for the arterial middle-pressure. For the calculation of the arterial middle-pressure I used the following formula¹⁹:

arterial middle-pressure = diastolic value + 1/3 (systolic value - diastolic value)

$$P_m = P_d + 1/3 (P_s - P_d)$$

- % figures: percentage of improvement of blood pressure in group A, and in group B percentage of deviation of blood pressure values.

6.3 Results in group A

In the treated group, 13 probationers with hypertension, the measurement of the arterial blood pressure and treatment with the described Fluid Drive Technique was applied. The group consisted of 4 women and 9 men aged between 40 and 65 years. At all probationers - before treatment with my technique - one or both pressure values were beyond the norm. The systolic values were between 193 mmHg and 137 mmHg. At the diastolic values the highest was 110 mmHg and the lowest 74 mmHg. The arterial middle-pressure amounted between 134 mmHg and 100 mmHg.

The measured values **after** the treatment were the following:

¹⁹ Physiologie des Menschen, 1987 [13]

The highest systolic pressure value was 172 mmHg, the lowest 125 mmHg. At the diastolic pressure value the highest was 95 mmHg and the lowest 95 mmHg. Showing the deviations of the blood pressure values in percent, leads to the following results:

I should begin by mentioning that all probationers of this group showed a decrease in blood pressure values. The most significant modification of the systolic blood pressure was a decrease by 15,9%, the smallest by 5,6%.

The diastolic value could be decreased by 20%, the smallest alteration amounted 1,4%. The improvement of the arterial middle-pressure was between 18,2 % and 4,7%.

The statistic acquisition of all relevant data of Group A can be summarised up in the following result:

The probationers of group A showed on average an improvement of 10%, i.e. decrease of the systolic pressure.

The diastolic value could as well be decreased by 10%.

The arterial middle-pressure therefore resulted in a modification of 10,6% towards the norm.

Example diagram for group A:

	female	56	years
Improvement:			
Syst.	15,9	%	
Diast.	20,0	%	
Art. Press.	18,2	%	

The chart above clarifies as an example the change of blood pressure of probationer A1 in the treatment group. The red, the blue and the violet column on the left side of the diagram show the starting data of the systolic blood pressure (164 mmHg), the diastolic blood pressure (110 mmHg) and the arterial middle-pressure (128 mmHg). The red, the blue and the violet column on the right hand side of the diagram show the change of in blood pressure data after the treatment. The systolic pressure, now at 138 mmHg, shows an improvement of 15,9%, the diastolic pressure, now at 88 mmHg, improves of 20,0%. The arterial middle-pressure, after the treatment at 105 mmHg, improves of 18,2%. The diagrams of all probationers of group A are listed in the supplement of the theses.

6.4 Results in group B

In group B, i.e. the control group were 12 probationers. The group consisted of 8 women and 4 men aged between 31 and 64 years.

All probationers at the first reading of blood pressure had to show pressure values beyond the norm. The systolic values were between 166 mmHg and 141 mmHg. Among the diastolic values the highest was 100 mmHg and the lowest 91 mmHg. The highest arterial middle-pressure was 121 mmHg and the lowest 109 mmHg.

After the second measurement, the probationer was lying relaxed for some minutes on the therapy bed **without** having been treated by me, the measured values were the following:

The highest systolic pressure value was 167 mmHg, the lowest 141 mmHg. Among the diastolic pressure values the highest was 100 mmHg and the lowest 90 mmHg. The arterial average-pressure amounted between 120 mmHg and 107 mmHg.

Showing the deviations of the blood pressure values in percent, leads to the following results:

The most significant deviation of the systolic blood pressure value was 2,0%, the smallest was 0,0%.

The diastolic value was altered max. by 5,0%, the smallest alteration amounted 0,0%. The highest deviation of the arterial middle-pressure was 2,9% and the smallest 0,3%.

It has to be mentioned that those data in percent show the natural fluctuation of the blood pressure during a period of some minutes. Therefore in this case there is no evidence for an improvement or worsening.

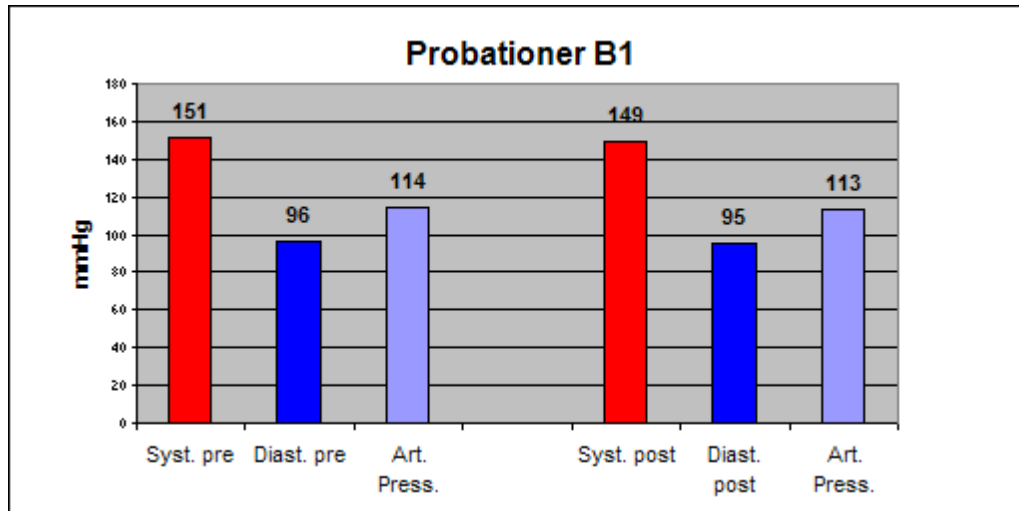
The statistic acquisition of all relevant data of Group B can be summarised up in the following result:

The probationers of the control-group showed on average a variation of the systolic pressure value of 0,1%

The diastolic value - for the whole group B- varied by 0,7%.

The arterial middle-pressure resulted in a modification of max. 0,4%.

Example diagram for group B:



male 47 years

Change:

Syst.	-1,3	%
Diast.	-1,0	%
Art. Press.	-1,2	%

The chart above serves as an example how the blood pressure data of probationer 1 of the control group can be read. The red, the blue and the violet column at the left side of the diagram show the starting data of the systolic blood pressure (151 mmHg), the diastolic blood pressure (96 mmHg) and the arterial middle pressure (114 mmHg). The columns at the right side of the diagram show the data of the second measurement of probationer B1 after having no treatment. The systolic pressure, now at 149 mmHg, shows a change 1,3%, the diastolic pressure, now at 95 mmHg, changes of 1,0%. The arterial middle pressure, now at 113 mmHg, shows a change of 1,2 %. The diagrams of all probationers of group B are listed in the supplement of the theses.

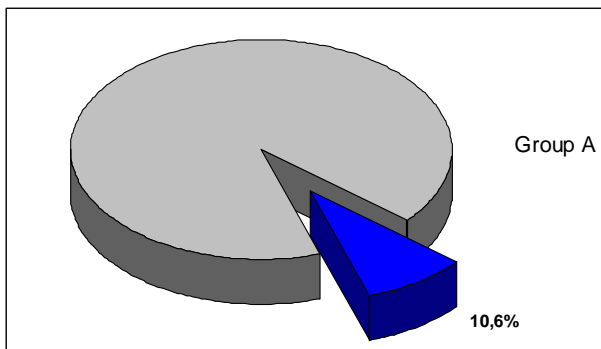
6.5 In comparison

Comparing the results of the two groups, it is evident in which extent the use of the Lateral Fluid Drive Technique can influence (decrease) increased blood pressure in a positive way.

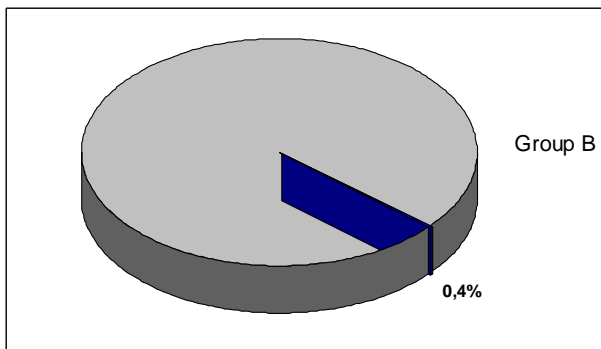
	Result systolic pressure in %	Result diastolic pressure in %	Result art. middlepressure in %
Group A	10,0 %	10,0 %	10,6 %

Group B	0,1 %	0,7 %	0,4 %
---------	-------	-------	-------

As a demonstrative example of the study result, I would like to clearly illustrate the significant difference between group A and group B with reference to the arterial middle-pressure in the following chart:



The blue piece of cake in the diagram demonstrates the improvement of 10 % in group A after the treatment.



The small blue segment in this diagram shows the fluctuation of 0,4 % in blood pressure in group B after having **no** treatment.

7 DISCUSSION

As far as I was not able to find any papers which deal with the subject chosen by me, I would like to make the following conclusion at the end of my study:

The comparison of the results of the both groups showed evidently, that it is possible to achieve a decrease of an increased blood pressure far beyond the normal fluctuation, by using the Lateral Fluid Drive Technique. The improvement by around 10 %

in all compared values, i.e. systolic-, diastolic- and arterial middle-pressure, after a single application of the Technique, means an outstanding success to me.

The result of the study, which was undoubtedly a success within the framework of my guidelines, does not allow to draw a conclusion, but only allows to hold out the prospect of a clinical application.

In daily work, however, there is a field of application: patients whose blood pressure during an anamnesis is too high for an osteopathic treatment, can be brought to a treatable level by this technique. Of course, it is very important not to ignore other symptoms shown by the patient.

The result of this pilot study is a basis for me, to build on further studies.

I should be verified, whether it is possible to treat patients with hypertension applying this Technique. A study which researches a possible decrease of blood pressure, over a longer period would be of great interest, whereas - according to the information of the treating doctor- a value which stays decreased for a period of 24 hours, can be already seen as success.

Another field of application might be the treatment of hypertension during pregnancy and lactation and therefore a medication could be avoided. In this connection one might also think about the application within EPH-Gestosis.

Working with about twelve probationers in the treatment group and in the control group is enough starting a pilot study. But as I wrote

above it only shows a tendency how people with increased blood pressure can react on fluid drive techniques. Because of that I have started a new study in May 2005. Under the same guide lines and methods used in my pilot study I want to collect statistic data of 50 probationers in the treatment group and in the control group. Up to now I have treated about 60 people (thirty in each group) and in a general view the statistic data seem to be quite similar to the data in my first study. The next one or two years will show if the two studies will lead to the same result.

7.1 In Conclusion

To apply a technique and to analyse the results may be important for scientific work. For our work as osteopaths it is much more important, not only to decrease for example blood pressure by using a single technique, but to see also the human being in his entirety of body and soul and to treat and to respect him.

Using Liquor-Techniques and working with the Potency in the Fluid means to involve the whole body in the therapeutic process and to work osteopathically in the true sense of the word.

8 REFERENCES

[1] BROOKS R. E. (Editor): Life in Motion, The Osteopathic Vision of R. E.Becker, D.O. Rudra Press, Portland, Oregon 1997.

[2] DOVESMITH E. E.: Some Clinical Observations on FLUID FLUCTUATION AND THE AUTONOMIC SYSTEM. Milwaukee 1950,Journal of the Osteopathic Cranial Association, 1953.

[3] DRENCKHAHN D., ZENKER W.: Benninghoff Anatomie, Makroskopische Anatomie,Embryologie und Histologie des

Menschen, Band 1, 15.Auflage, Urban&Schwarzenberg, München – Wien - Baltimore, 1994.

[4] DRENCKHAHN D., ZENKER W.: Benninghoff Anatomie, Makroskopische Anatomie, Embryologie und Histologie des Menschen. Band 2, 15.Auflage, Urban&Schwarzenberg, München-Wien- Baltimore, 1994.

[5] FREYMANN V. M.: Cerebrospinal Fluid Motion. The collected papers of Viola M. Freymann, D.O. (without further details)

[6] JEALOUS J. S.: A Biodynamic View of Osteopathy in the Cranial Field. Handout and notes from courses in Vienna 1998 and Pöttmes 2000.

[7] KRÄMER G. (Hrsg.): F. H. NETTER, Nervensystem 1, Neuroanatomie & Physiologie. Georg Thieme Verlag, Stuttgart-New York, 1987

[8] MAGOUN H. I.: Osteopathy In The Cranial Field. Original Edition. 2nd Printing, SCTF, 1997.

[9] MAGOUN Harold I.: THE CRANIAL APPROACH TO THE CARDIOVASCULAR RENAL SYNDROME. Chicago, 1950. Journal of the Osteopathic Cranial Association, 1953.

[10] PSCHYREMBEL, KLINISCHES WÖRTERBUCH. Bearbeitet v.d. Wörterbuchredaktion d. Verlages, Leitung Ch. Zink, 256. Auflage, de Gruyter, Berlin-New York, 1990.

[11] ROHEN J.W., YOKOCHI C.: Anatomie des Menschen. Photographischer Atlas der systematischen und topographischen Anatomie. 3. Auflage, Schattauer, Stuttgart-New York, 1993.

[12] SCHMAILZL K. J.G. (Hrsg.): Harrisons Innere Medizin, Band 1, dt. Ausgabe der 13. Auflage, Blackwell Wiss.-Verl., Berlin-Wien (u.a.), 1995

[13] SCHMIDT R.F., THEWS G. (Hrsg.): Physiologie des Menschen. 23. Auflage, Springer Verlag, Berlin-Heidelberg, 1987.

[14] SUTHERLAND A.ST., WALES A.L. (Editors): Contributions of

Thought. The Collected Writings of William G. Sutherland, D.O. .
2nd Edition, Rudra Press, Portland, Oregon, 1998.

[15] WALES A. L.: The Management, Reactions and Systemic Effects of Fluctuation of the CSF. 1950. Journal of the Osteopathic Cranial Association, 1953.

9 LIST OF PICTURES

Fig.1 page 7: *Cranium, lateral view*. Benninghoff Anatomie, Band 1, 15. Auflage, page 478, Urban&Schwarzenberg, 1994 [**3**]

Fig.2 page 8 : *Fossa cranii interna*. Benninghoff Anatomie, Band 1, 15. Auflage, page 484, Urban&Schwarzenberg, 1994 [**3**]

Fig.3 page 9 : *Os temporale, external view*. Anatomie des Menschen, 3. Auflage, page 31, Schattauer, 1993 [**10**]

Fig.4 page 9: *Os temporale, internal view.* Anatomie des Menschen, 3.Auflage, page 30, Schattauer, 1993 [10]

Fig.5 page 11 : *Tentorium and falx.* Benninghoff Anatomie, Band 2, 15.Auflage, page 349, Urban&Schwarzenberg, 1994 [4]

Fig.6 page 13: *Ventricle system.* Anatomie des Menschen, 3.Auflage, page 110, Schattauer, 1993 [10]

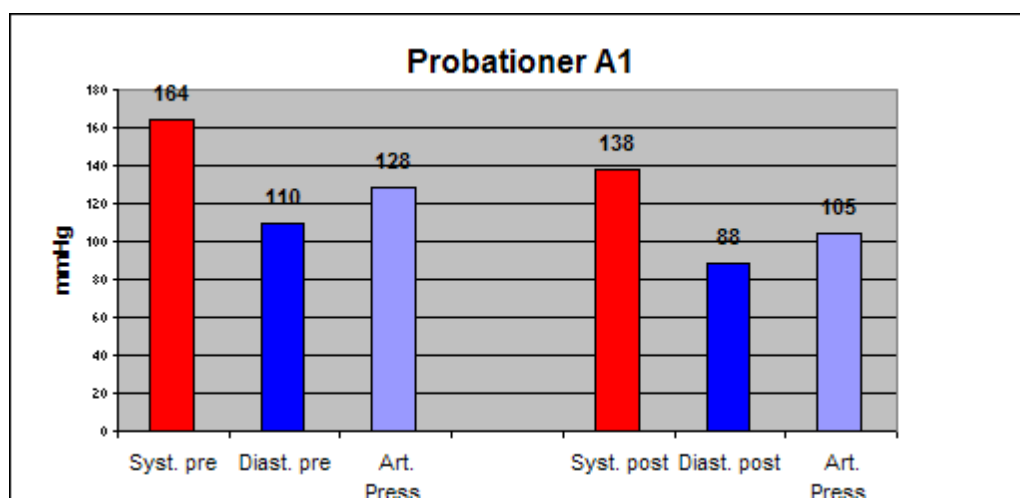
Fig.7 page 27: *Handhold looked at from sidlong behind.,*W. Krasser, 2000

Fig.8 page 27: *Handhold from left side...* . W.Krasser, 2000

10 SUPPLEMENT

10.1 Results in details

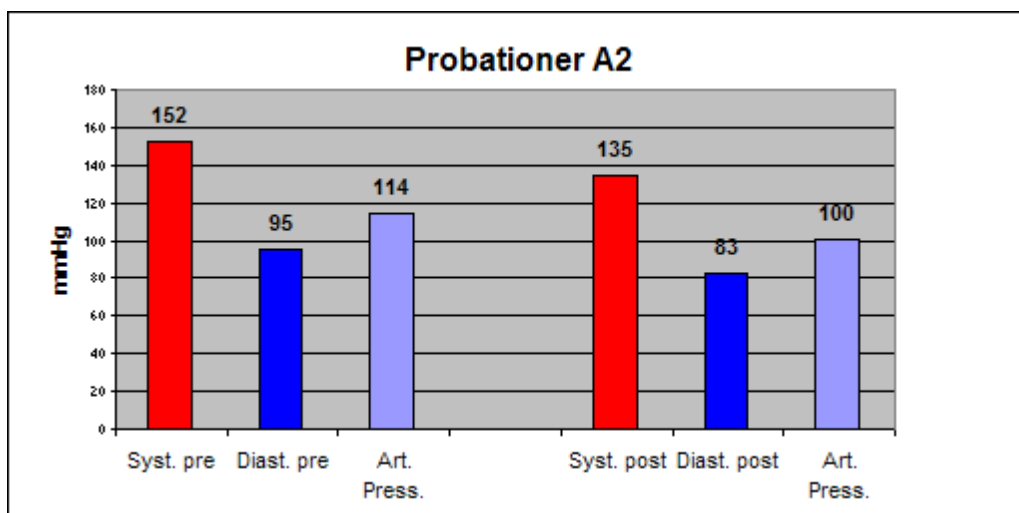
On the basis of the following charts the course of the statistic data acquisition for all probationers of Group A can be understood in detail.



female 56 years

Improvement:

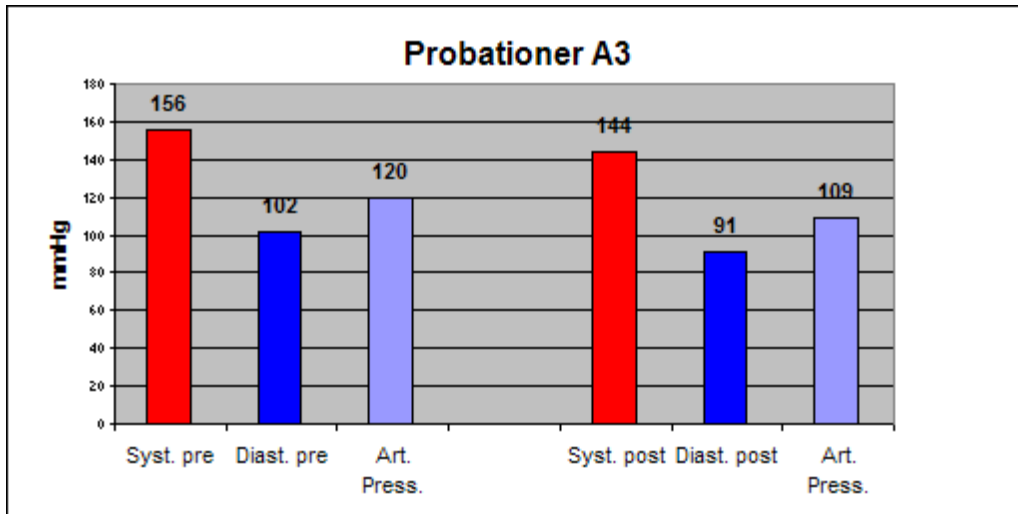
Syst.	15,9	%
Diast.	20,0	%
Art. Press.	18,2	%



male 42 years

Improvement:

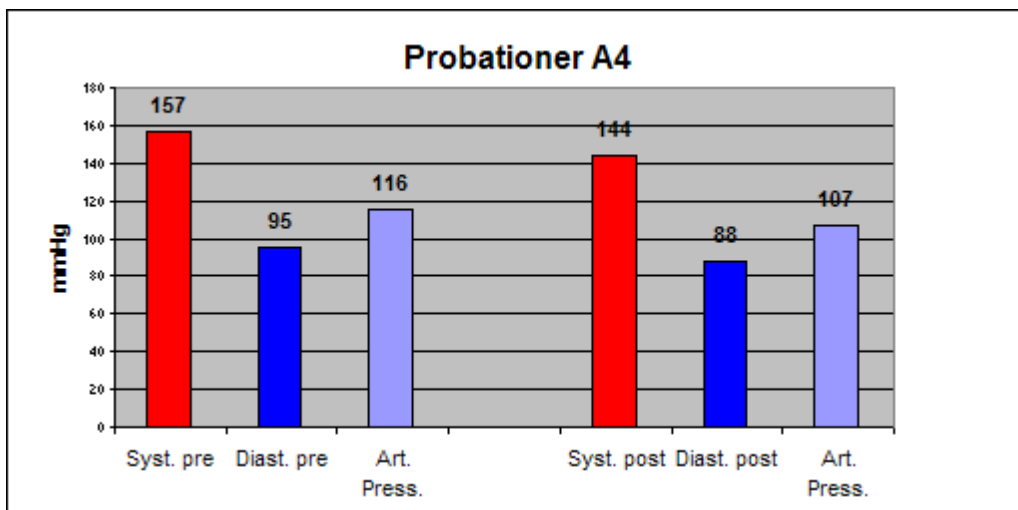
Syst.	11,2	%
Diast.	12,6	%
Art. Press.	12,0	%



male 40 years

Improvement:

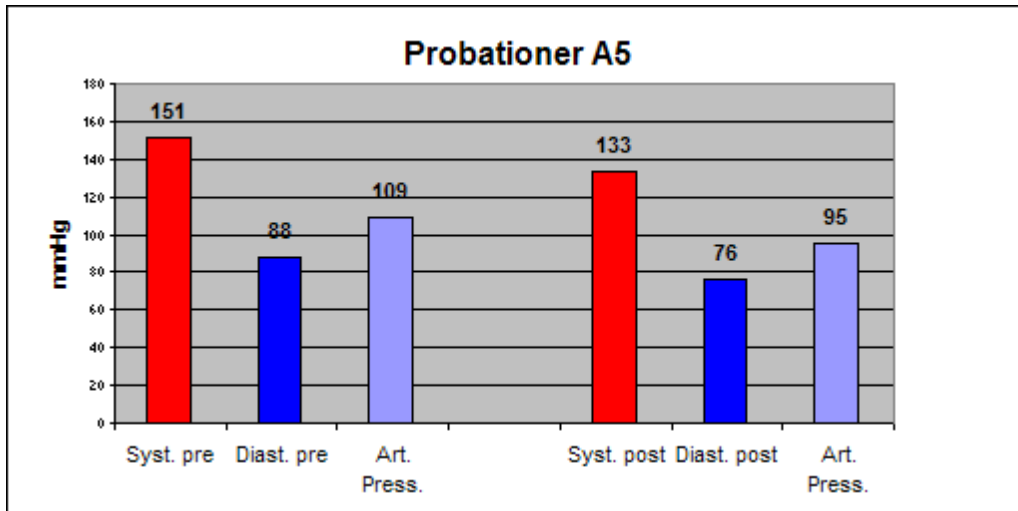
Syst.	7,7 %
Diast.	10,8 %
Art. Press.	9,4 %



male 59 years

Improvement:

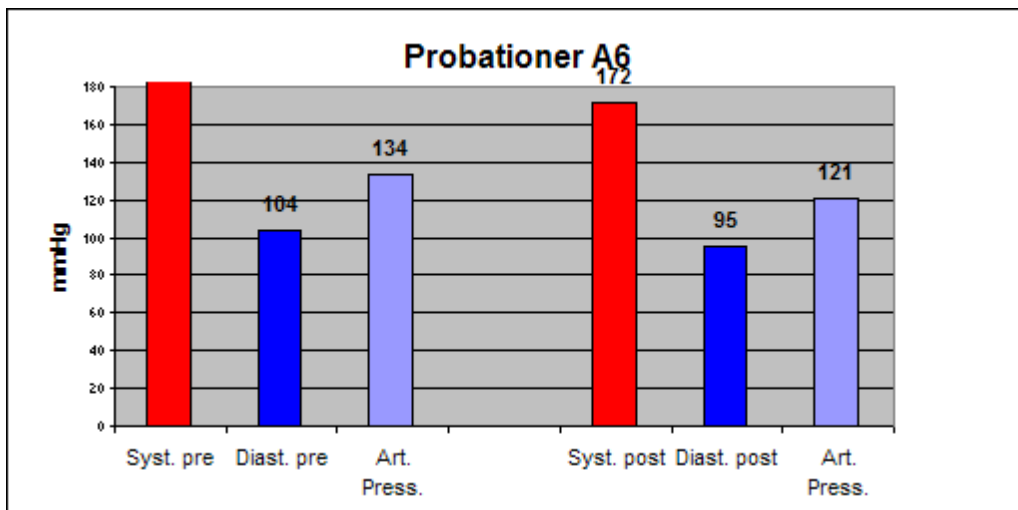
Syst.	8,3 %
Diast.	7,4 %
Art. Press.	7,8 %



male 42 years

Improvement:

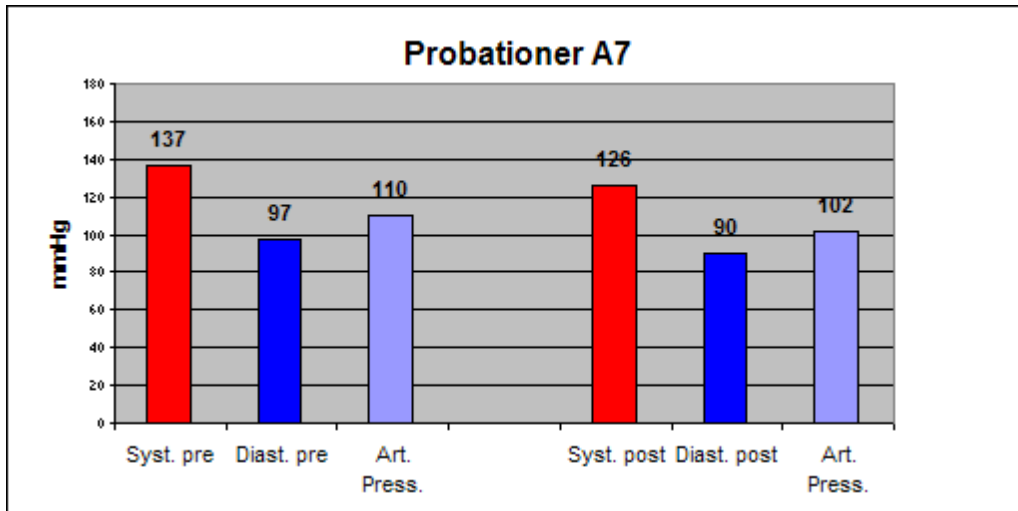
Syst.	11,9 %
Diast.	13,6 %
Art. Press.	12,8 %



male 50 years

Improvement:

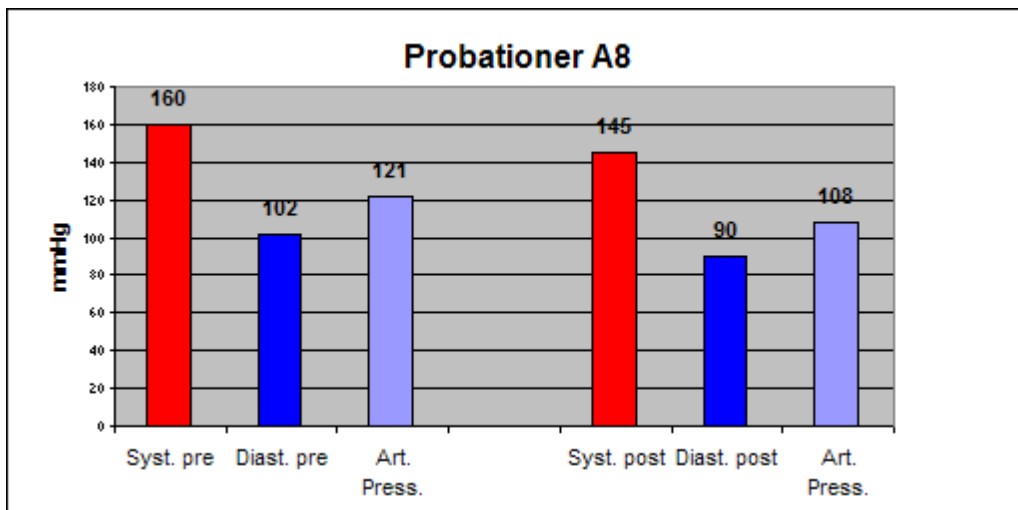
Syst.	10,9 %
Diast.	8,7 %
Art. Press.	9,7 %



female 59 years

Improvement:

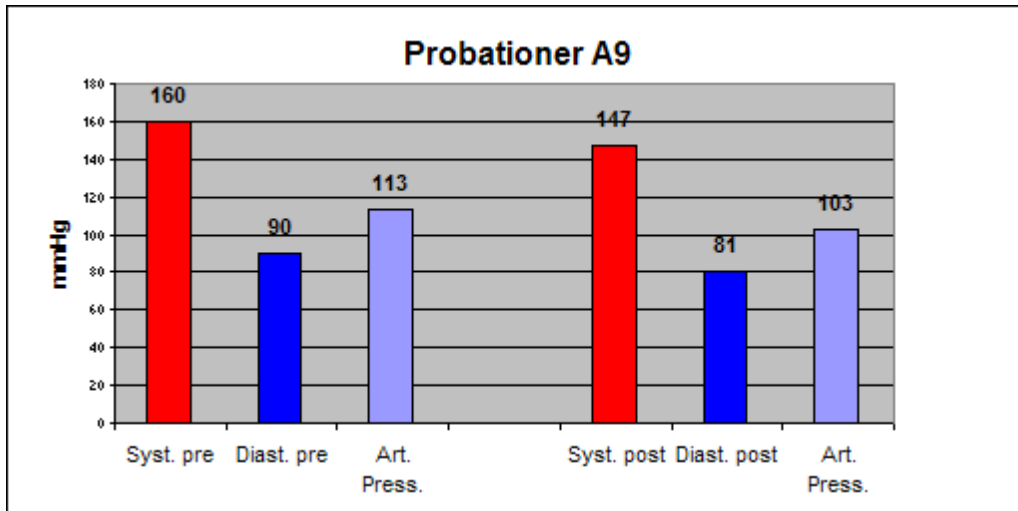
Syst.	8,0 %
Diast.	7,2 %
Art. Press.	7,6 %



female 54 years

Improvement:

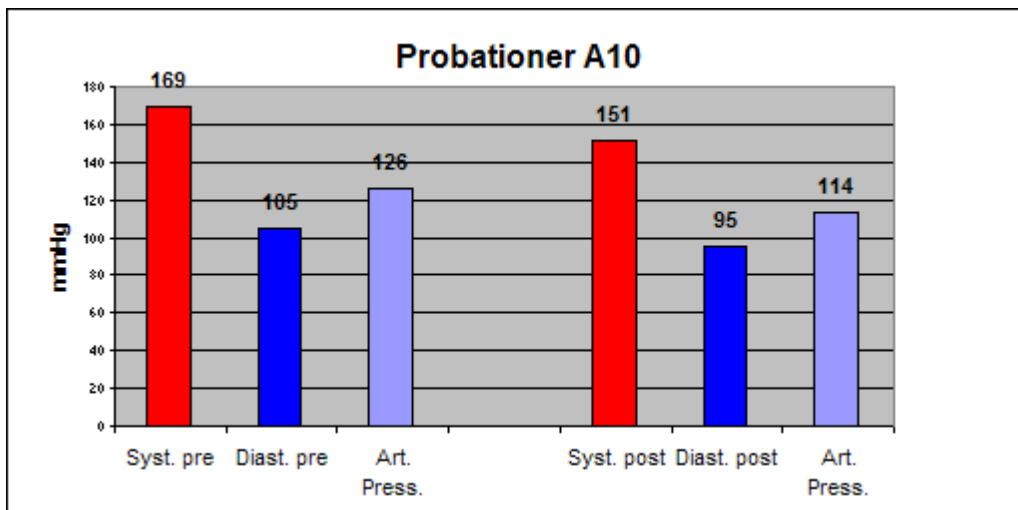
Syst.	9,4 %
Diast.	11,8 %
Art. Press.	10,7 %



male 61 years

Improvement:

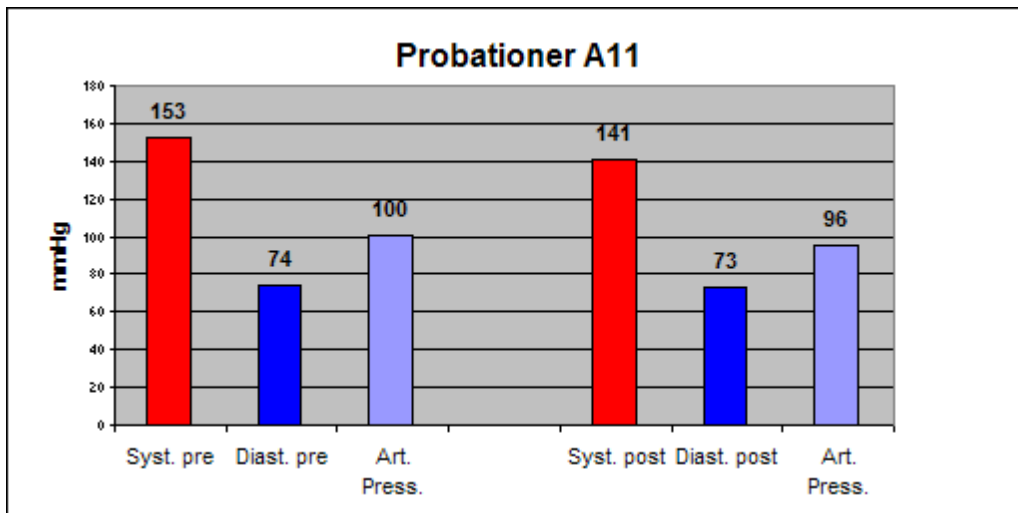
Syst.	8,1 %
Diast.	10,0 %
Art. Press.	9,1 %



male 62 years

Improvement:

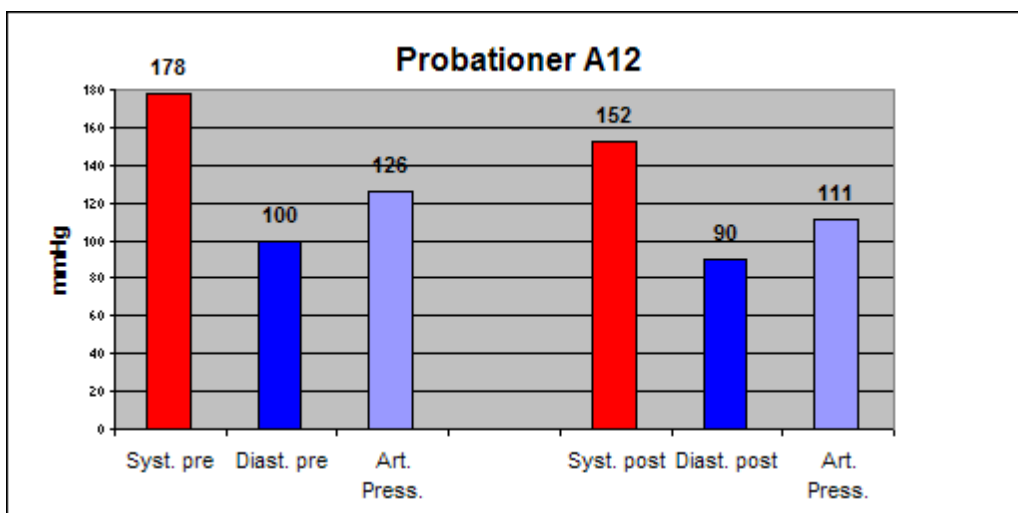
Syst.	10,7 %
Diast.	9,5 %
Art. Press.	10,0 %



male 67 years

Improvement:

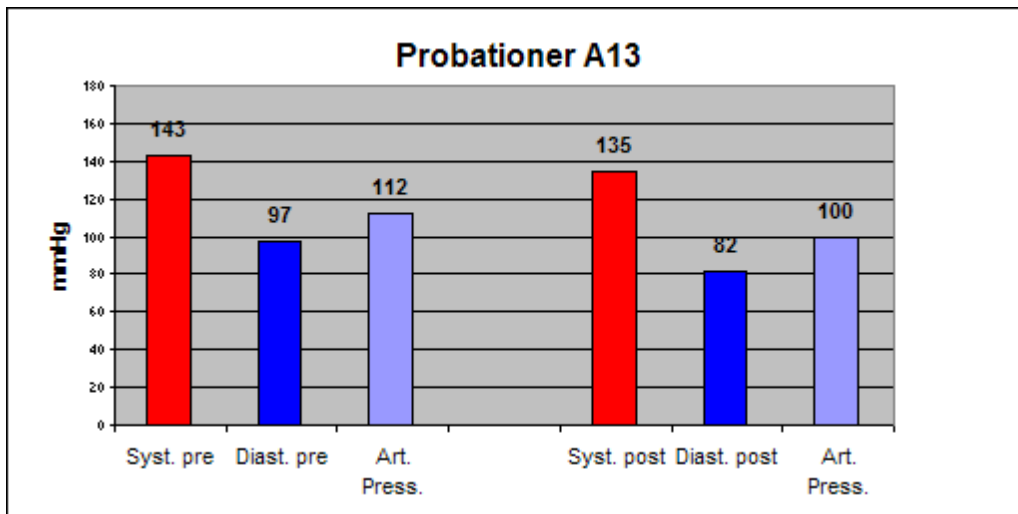
Syst.	7,8 %
Diast.	1,4 %
Art. Press.	4,7 %



male 64 years

Improvement:

Syst.	14,6 %
Diast.	10,0 %
Art. Press.	12,2 %

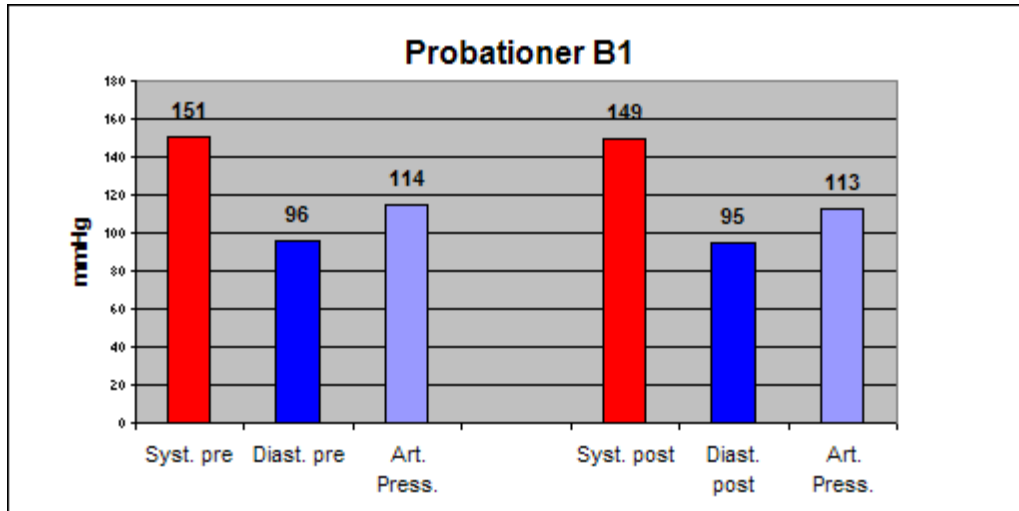


female 53 years

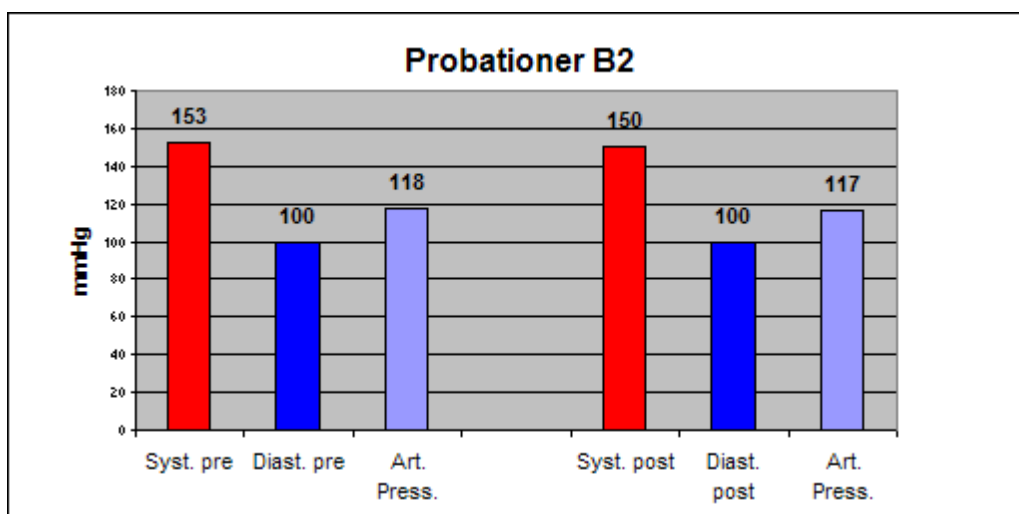
Improvement:

Syst.	5,6	%
Diast.	15,5	%
Art. Press.	11,3	%

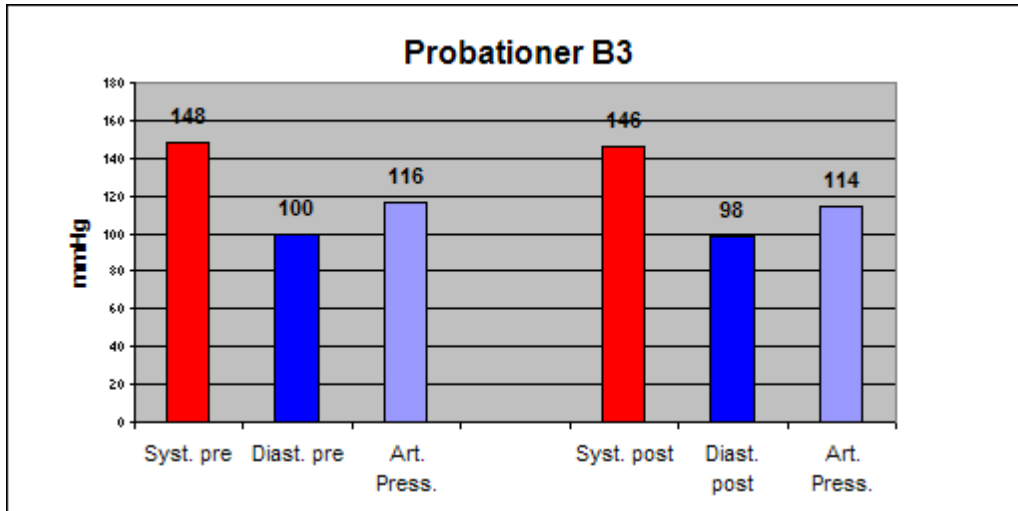
On the basis of the following charts the course of the statistic data acquisition for every probationer of the control-group can be understood in detail.



male 47 years
 Change:
 Syst. -1,3 %
 Diast. -1,0 %
 Art. Press. -1,2 %

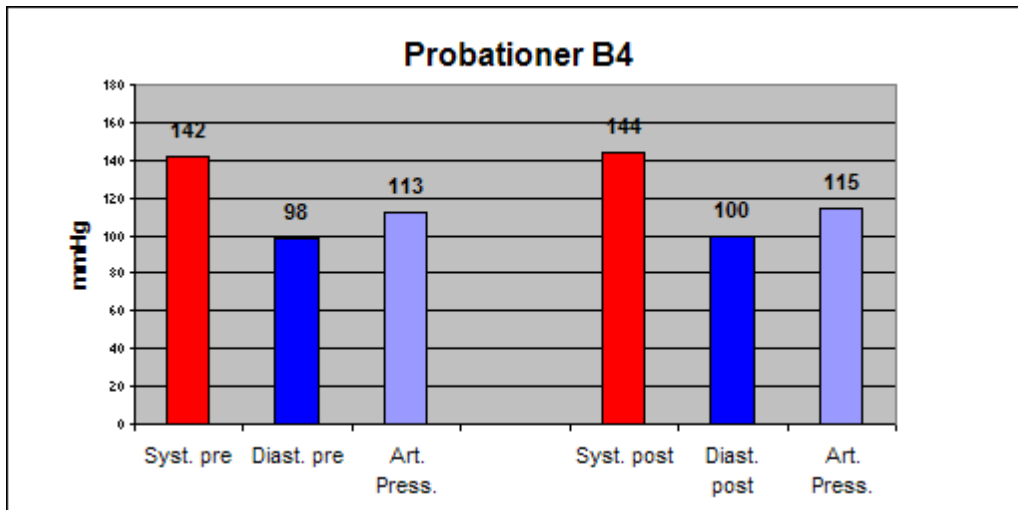


female 41 years
 Change:
 Syst. -2,0 %
 Diast. 0,0 %
 Art. Press. -0,8 %



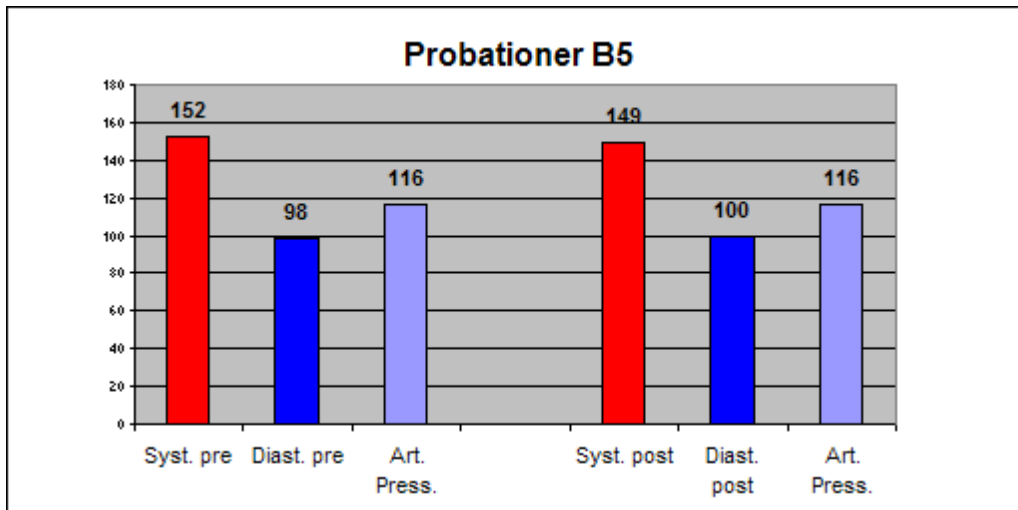
Change: female 41 years

Syst.	-1,4	%
Diast.	-2,0	%
Art. Press.	-1,7	%



Change: male 41 years

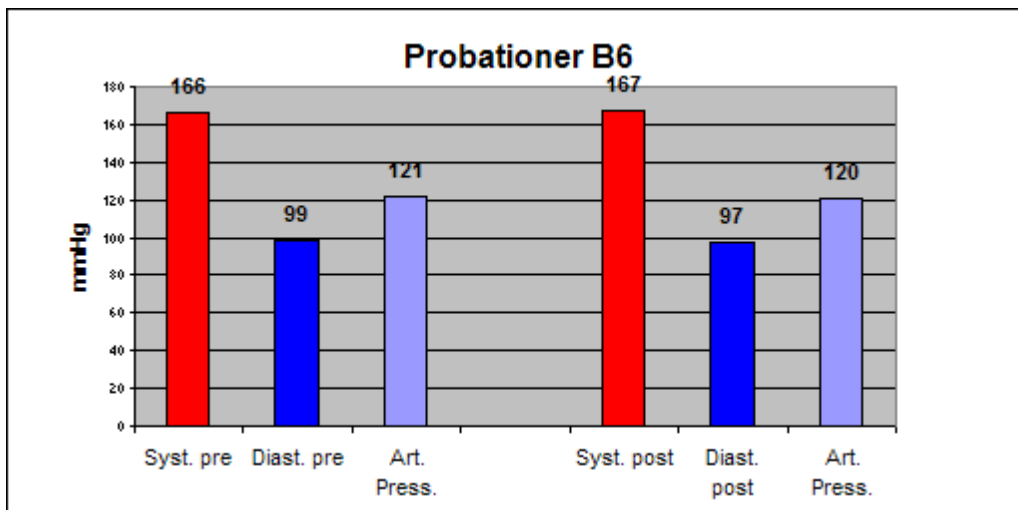
Syst.	1,4	%
Diast.	2,0	%
Art. Press.	1,8	%



female 44 years

Change:

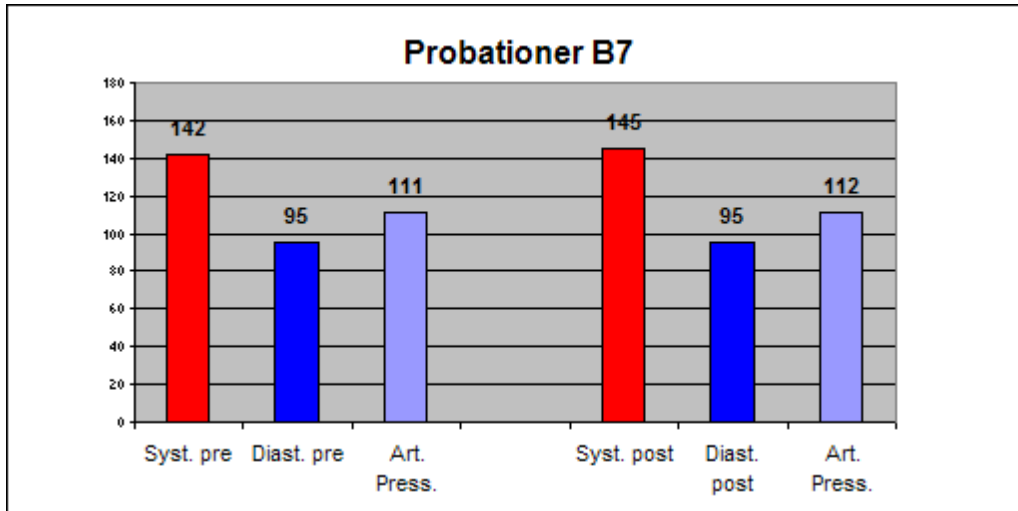
Syst.	-2,0	%
Diast.	2,0	%
Art. Press.	0,3	%



female 44 years

Change:

Syst.	0,6	%
Diast.	-2,0	%
Art. Press.	-0,8	%

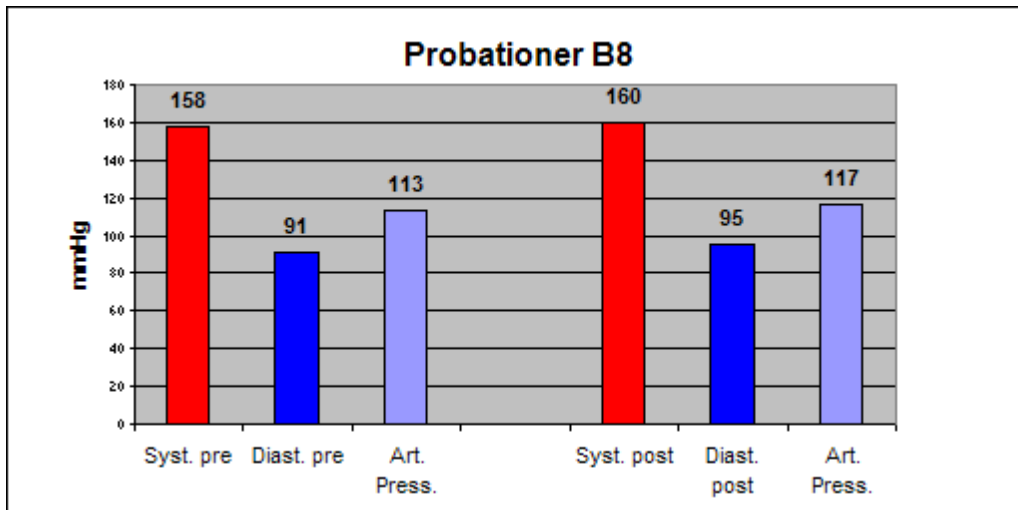


Change: male 31 years

Syst. 2,1 %

Diast. 0,0 %

Art. Press. 0,9 %

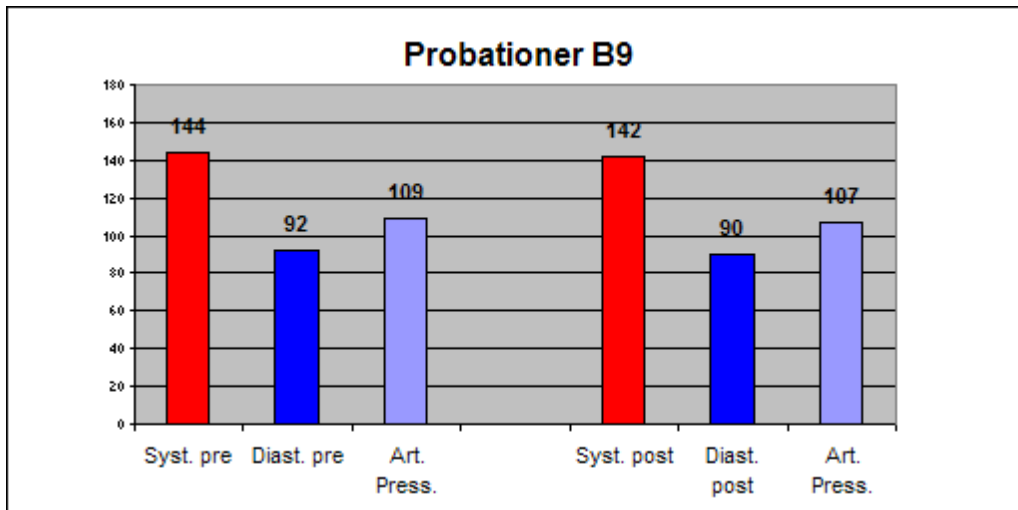


Change: female 59 years

Syst. 1,3 %

Diast. 4,4 %

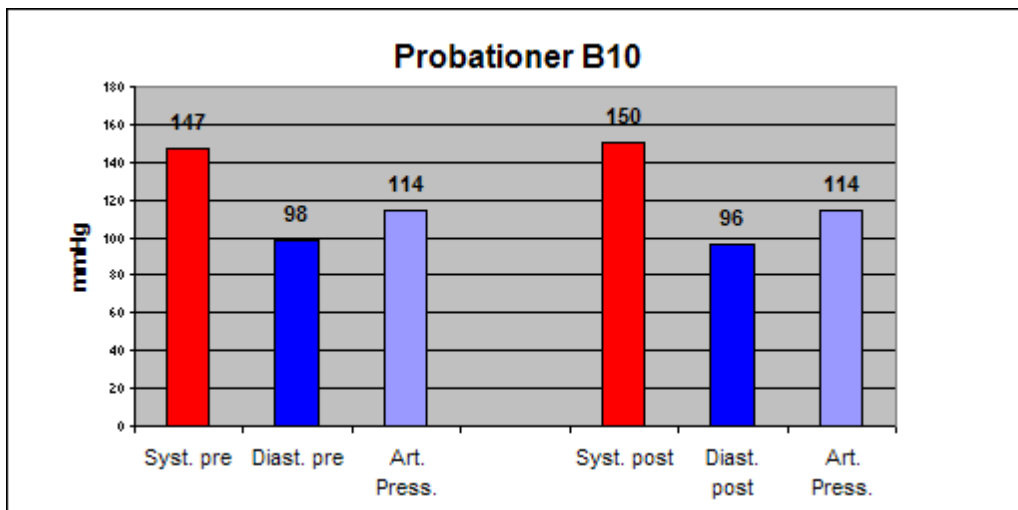
Art. Press. 2,9 %



female 59 years

Change:

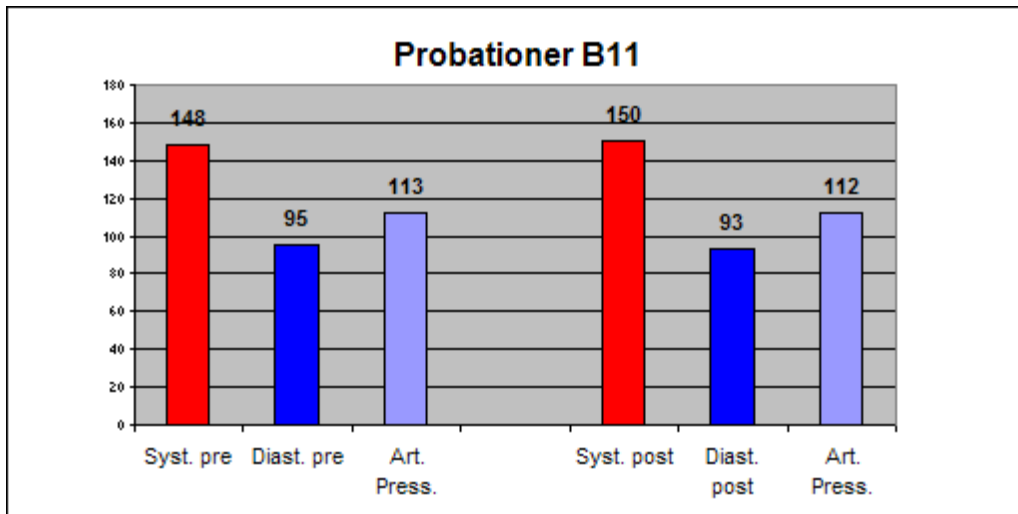
Syst.	-1,4	%
Diast.	-2,2	%
Art. Press.	-1,8	%



male 50 years

Change:

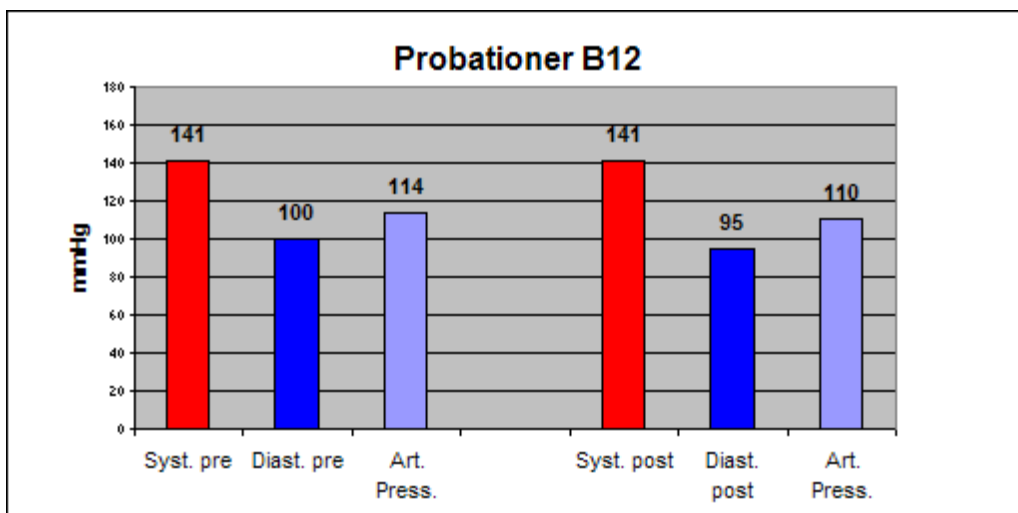
Syst.	2,0	%
Diast.	-2,0	%
Art. Press.	-0,3	%



female 64 years

Change:

Syst.	1,4	%
Diast.	-2,1	%
Art. Press.	-0,6	%



female 56 years

Change:

Syst.	0,0	%
Diast.	-5,0	%
Art. Press.	-2,9	%

10.2 Results overview

Probationer	Sex	Age	Syst. Pre	Diast. Pre	Art. Press.	Syst. Post	Diast. Post	Art. Press.	Result Syst.	Result Diast.	Result Art. Press.
			mmHg	mmHg	mmHg	mmHg	mmHg	mmHg	%	%	%
A1	female	56	164	110	128	138	88	105	-15,9	-20,0	-18,2
A2	male	42	152	95	114	135	83	100	-11,2	-12,6	-12,0
A3	male	40	156	102	120	144	91	109	-7,7	-10,8	-9,4
A4	male	59	157	95	116	144	88	107	-8,3	-7,4	-7,8
A5	male	42	151	88	109	133	76	95	-11,9	-13,6	-12,8
A6	male	50	193	104	134	172	95	121	-10,9	-8,7	-9,7
A7	female	59	137	97	110	126	90	102	-8,0	-7,2	-7,6
A8	female	54	160	102	121	145	90	108	-9,4	-11,8	-10,7
A9	male	61	160	90	113	147	81	103	-8,1	-10,0	-9,1
A10	male	62	169	105	126	151	95	114	-10,7	-9,5	-10,0
A11	male	67	153	74	100	141	73	96	-7,8	-1,4	-4,7
A12	male	64	178	100	126	152	90	111	-14,6	-10,0	-12,2
A13	female	53	143	97	112	135	82	100	-5,6	-15,5	-11,3
B1	male	47	151	96	114	149	95	113	-1,3	-1,0	-1,2
B2	female	41	153	100	118	150	100	117	-2,0	0,0	-0,8
B3	female	41	148	100	116	146	98	114	-1,4	-2,0	-1,7
B4	male	41	142	98	113	144	100	115	1,4	2,0	1,8
B5	female	44	152	98	116	149	100	116	-2,0	2,0	0,3
B6	female	44	166	99	121	167	97	120	0,6	-2,0	-0,8
B7	male	31	142	95	111	145	95	112	2,1	0,0	0,9
B8	female	59	158	91	113	160	95	117	1,3	4,4	2,9
B9	female	59	144	92	109	142	90	107	-1,4	-2,2	-1,8
B10	male	50	147	98	114	150	96	114	2,0	-2,0	-0,3
B11	female	64	148	95	113	150	93	112	1,4	-2,1	-0,6
B12	female	56	141	100	114	141	95	110	0,0	-5,0	-2,9

Group A	54,5								-10,0	-10,0	-10,6
Group B	48,1								0,1	-0,7	-0,4

10.3 Questionnaire

family name:

first name:

age:

sex: female / male

address:

tel.nr.:

° Did you know before that your blood pressure is higher then normal?

yes no

° When has the increased blood pressure been diagnosed the first time?

years months days

° Has your blood pressure ever been treated medicinal?

yes no

° Do you take any medicine to decrease your blood pressure at the moment?

yes no

° Have there ever been diagnosed any cardio – vascular diseases?

yes no which:

° How often do you check your blood pressure?

.../ day

° How often do you see your doctor?

every weeks month

° Is there any fluctuation in your blood pressure or is it always quit the same?

fluctuation same

° How high was your blood pressure at the last check?

syst./diast.: /

° Was there any physical or psychological trauma before?

yes no

I agree to join the study about decrease of blood pressure by using an osteopathic technique as a probationer nad I have been informed accordingly.

..... /

place / date

page 1

.....

signature

date / place

Measurement

syst.	diast.
1	
2	

Results (changes)

	syst.	diast.	a.m.p
improvement in %			
equality			
worsening in %			

page 2

10.4 Fax