

English version of the study

*„t o u c h“*

Touch – Perception – Communication  
In the Context of Osteopathic Treatment

Master Thesis for obtaining the degree  
Master of Science in Osteopathy

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handed in

by

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A photograph of two hands reaching towards each other, set against a warm, golden light that creates a soft glow. The hands are positioned in the center of the frame, with fingers slightly curled as if about to grasp each other. The background is a plain, light-colored wall, and the overall mood is intimate and tender.

*„the touch“*

*for*

*conny and my children*

*tim lea & noah*

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## **ABSTRACT**

**OBJECTIVE:** Every day osteopaths palpate and touch patients. We communicate, touch them, perceive them. Taking a look at the patients, listening closely to them, taking time, touching and palpating them, the question of a closer investigation of the “tactile touch” imposes itself. This against the background of many people getting complaints because of pressure and stress in every-day life. The technical advance of medicine and the medical apparatus have gained a lot of importance. The hands for palpating, touching, feeling are threatened to be shoved into the background. This lead to the question of a tactile (haptic) Touch – Perception – Communication to a context of osteopathic treatment.

**METHODS:** Through a scientific analysis of literature (review) an overview of the tactile touch should be achieved. Because of the wide range of a touch, it was limited to the tactile (haptic) touch. Therapy it was established, that the perception (personality perception) and communication (nonverbal communication) interact with touch with respect to this and therefore cannot be seen seperately.

**RESULT:** On the basis of studies and result with regard to the mechanisms of human perception and their communication the meaning and importance of a tactile touch – personality perception – nonverbal communication in mutual interaction is underlined in the context of osteopathic treatment. An influence on the body and its functions becomes evident and the process of healing is supported.

**CONCLUSION:** Even though a limitation on the tactile touch had to be made for the process of this study, the importance of the connection with the communication of personality perception and nonverbal could show, that all three aspects interact and therefore stand in the context of an osteopathic treatment. They can make an important contribution for a successful therapeutic intervention.

**KEYWORDS:** Touch, perception, communication, palpating.

## PREFACE AND MOTIVES

*„Es ist klar, dass die entscheidende Form im Umgang  
mit den Dingen nichts anderes als die Berührung  
sein kann. Und da es so ist,  
sind Berührung und Kontakt die unbedingt  
wichtigsten Faktoren in der Struktur dieser Welt“*

(Ortega & Gasset nach Wilke & Leuner, 1990)

It took me a rather long time of thinking whether I should dedicate my master thesis to the following working title:

*„t o u c h “*

### TOUCH – PERCEPTION – COMMUNICATION IN THE CONTEXT OF OSTEOPATHIC TREATMENT

In my daily work as osteopath for many years I have touched and palpated people. From time to time I have astonishing, partly even fascinating moments or experiences. This has changed and formed my attitude towards my work. I think that now I am pursuing a way that inspires me or rather challenges me to approach touch, in particular tactile (haptic) touch, within the context of an osteopathic treatment.

Kerstin Schuster, April 2007

## OBJECTIVES

In our daily work as osteopaths we treat people who come to see us. We touch them, we perceive them and we communicate with them. Very often we touch someone without perceiving him/her consciously and without communicating consciously. What does science know about tactile (haptic) touch and perceptions, in particular personality perception? What does science know about communication or nonverbal communication, respectively, between people? Which meaning does all of this have within the context of an osteopathic treatment?

In order to approach these questions, I decided to choose the following working title:

*„t o u c h“*

TOUCH – PECEPTION – COMMUNICATION  
IN THE CONTEXT OF OSTEOPATHIC TREATMENT

## 1. INTRODUCTION

Beset with pressure and stress more and more people develop health problems. If one looks at the patients, listens carefully to them, and takes some time to 'touch and palpate' them besides tactile (haptic) touch the question of closer examination by means of perception and communication arises. Especially because of the fact that in medicine technical progress and apparative medicine have reached such an outstanding importance (Lown 2004).

Thus listening to and communicating with patients 'fall by the wayside', due to a lack of time, characteristic for our current health systems. Touching, feeling and tactile palpating the patient often becomes a minor matter (Lown 2004). In his culture-psychological research Sennet (1988) stresses a critical reflection of the tactile touch; especially because of its meaning for our daily life. He realises the danger that this loss, which goes hand in hand with recent technical and cultural developments, would mean a loss of humanness/humanity.

A change of thinking within the so-called health system care takes place only slowly. Off from highly modern apparative medicine, pharmacology and medicine characterised by coldness up to a patient-oriented, holistic medicine (Bevis 2001). This includes as one of many aspects the first touch at the meeting of therapist and patient, perception and communication. The handshake - a welcome address, a gesture of hospitality and a sign of willingness to accept someone as a connatural human being (Lown 1996).

Wittgenstein (1969/1990) describes this as the connection of two subjects (or of a subject with the world). Behind this touch hides more than the mere physical or mechanical contact. Of course we often touch people in a merely technical, examining or 'executing' way. Bevis (2001) calls this procedural touch. But every touch, no matter if it happens consciously or not, has got some psychologically meaningful content (Chaitow from Bevis 2001).

To feel, touch and sense are three words to describe touch or perception by means of touch (Wagener 2000). Thereby different aspects become clear. The soft touch I 'feel' at my back is felt as a passive sensation of touch I receive. To 'feel good' thereby is the emotional aspect of this. To 'touch' objects often implies the active investigation of our surrounding and environment. And finally the word 'to sense' establishes a connection with perceiving or comprehending (i.e. sensing) on a cognitive level, which is preceded by the objective touch.

First of all the reader shall be introduced by means of definitions into origin, development and meaning of the word touch, communication and haptic perception. Thereby verbal aspects as well as idioms will be mentioned, too.

In a short historical outline the development of the science of 'perception' will be mentioned and furthermore it will be referred to different fields of touch.

As perception and communication is a very broad field I decided to narrow it down with regards to the context of an osteopathic treatment. Thus in the chapter 'perception and communication' I will go into detail concerning the personality perception and nonverbal communication. Different forms of touch will be highlighted in the context of perception and communication and will be then connected with the context of an osteopathic treatment.

The following chapter will deal with the inspection of the hand as tactile organ whereas the subsequent chapter will treat the skin as tactile organ. Thereby especially haptic (tactile) touch will be focussed. Different aspects about the histological structure of the skin, the functionality of the haptic system as well as the complex coherencies will be worked out and then illuminated in the context of an osteopathic treatment.

Due to the separate summaries of the core points after each important chapter and paragraph shall point out the most crucial issues of each chapter to the reader. In the final discussion the reader should be able to understand the meaning of what an importance, what a complexity and what an impact one single touch can have. The reader should be able to understand touch as an aspect of our life that has got significant influence on us and that touch – perception – communication are in a permanent interaction and can thus be not seen as separated aspects.

At the end of this paper the reader should realise that these three terms a part of the daily work of an osteopath and thus stand in the context of an osteopathic treatment.

Osteopaths do not simply 'act', but also perceive their patient as a whole being to whom they establish interaction.

## 2. DEFINITIONS AND VERBAL ASPECTS

There are many terms that describe and characterise physical (tactile, haptic) touch. To touch, to shave, to grope somebody, to paw, to knead, to stretch, to pet, to grab, to massage, to hold, to embrace and to kiss are a few among them (Wagener 2000). Subsequently, the meaning of the terms ‘touch – perception – communication’ shall be introduced. By means of different definitions, etymological origin and idioms the range of these terms is demonstrated. This is important in order for establishing a context to ‘touch – perception – communication’ in the following chapters.

### 2.1. ETYMOLOGICAL – GERMAN (TRANSLATED INTO ENGLISH) – PHYSIOLOGICAL – SCIENTIFIC - DEFINITIONS

The word **communication** has entered the German sociological common parlance not before the 1970s. In 1967 the psychologists Paul Watzlawick, Don D. Jackson and Janet H. Beavin treated the role of communication within interpersonal relationship from a therapeutic point of view. In the Duden dictionary communication (lat. communicare, ‘to share, tell, let someone participate, do something together, unite’) is defined on a human everyday level, as shared activity. Thoughts, ideas, knowledge, insights and experiences are being communicated, shared and newly developed.

Communication in this sense is based on the usage of signs in language, gestures, mimic, writing, painting or music. The term communication is related to interaction (Watzlawick 1980) and is regarded by Maletzke (1998) as complex phenomenon, which cannot be described easily. In contrast to this stands a ‘general’ definition by Forgas (1999), who describes communication as a process, in the progress of which information is transmitted from a sender to a receiver. According to this general definition in chapter perception and communication and approximation shall be made. Thereby especially nonverbal communication will be focussed.

In a broader sense communication can be perception. Gegenfurtner (2003), Goldstein (2002) and Gibson (1973, 1982) scientifically makes the following distinction of the definition of the term **perception**:

1) In psychology and physiology perception means the sum of the single steps reception, selection, processing and interpretation of sensorial information (Goldstein 2002). But only that information that help the perceiving subject to adapt him-/herself to his/her environment or that give him/her feedback about his/her own behaviour. This means that according to this definition not all sensory input is perception, but only that which can be cognitively processed. It serves the orientation of the subject. Perception allows sensible acting and, among higher creatures 'the construction of mental models of the world'. This, again, allows anticipatory and planning thinking.

2) In biology the term perception is interpreted in a more narrow way. It means the ability of an organism to look for, to receive and to process information by means of its sensory organs.

According to Goldstein (2002) **haptic (tactile) perception (touch)** (Greek hapticos = palpable) means the active way of feeling out size, shape, surface texture, weight etc. of an object. There is an integration of all skin senses and depth sensibility (kinaesthetic proprioceptive sensibility). The totality of all haptic perceptions allows the brain to localise and evaluate mechanical stimuli, temperature stimuli and pain.

During haptic perception the motor cortex is always active (Lederman & Klatzky 1987). It stands in contrast to the perception of passive impact of stimuli like being touched. The German etymological Duden dictionary cites under this term 'berühren' (translates as 'to touch') the related word 'rühren' (translates as 'to stir'). In older states of language 'rühren' was predominantly used in the general sense of 'to put something in motion, to move'. It was also used in connection with the meaning of 'putting someone in inner motion, to excite someone'. From this meaning 'to put in motion, give an impulse' developed already in Early High German the meaning 'to abut, to touch, to feel'.

The German Duden (1981) explains 'touch' by means of the following examples: 'to establish contact by hand, to touch without clinging firmly to it, to shave, to touch someone accidentally'. A subject such as beautiful music may also 'touch' people. To be socially, culturally or humanly in contact with the environment can touch people. Also moving moments can touch us and leave an 'impression' or 'imprints'.

Starting from this linguistic background the connection of touch and movement clear becomes clear. This can also be tracked in our everyday lives. In order to initiate touch, bodily contact, movement is necessary (Wagener 2000). In order to lean towards someone, to approach someone, to make touch possible movement is necessary – even the touch itself is movement. For example a therapeutic manipulation, or rhythmic stretching of tense musculature. Or a kiss, a hit, a caress.

This is why our whole perception system – the visual, acoustic, as well as the tactile – is specialised to changes of perception. Only these changes cause a new focus to the touch perceived (Wagener 2000).

According to Wagener (2000) during a constant touch increasing warmth of the skin develops. Apart from the physical or bodily meaning, respectively, the term 'touch' is additionally used as a metaphor for emotional, mental contact that is established between two people (Wagener 2000).

The English word 'to touch', as well as French 'toucher' and German 'berühren' may be used in that sense. Thus touch is an expression of closeness, nearness and contact on a bodily, as well as on an emotional level. Therefore sense perception and touch have an individual meaning for each and every human being (Bevis 2001).

Physiology is a branch of biology (Greek physis, nature, Greek logos, doctrine). As the science of life processes it explains touch by means of the function of organs and body parts (Sheldrake 1985).

Different bodily regions are differently sensitive. Some parts react more sensitive to touch than others. And again some parts react more sensitive to pressure or heat than others. When circumscribing touch one concentrates on qualities of different mechanoreceptors, on function, locality, quantity etc. (see chapter on the body as

tactile organ). Furthermore we have to bear in mind that during touch different areas of the central nervous system are being affected. From this follows a reaction of the neuro-anatomic centre of coordination of posture and movement, of protective reflexes and sexuality.

## **2.2. SUMMARY OF THE CORE POINTS**

The previous chapter dealt with the particular definitions of touch – perception – communication as ‘umbrella terms’. Furthermore the origin of ‘haptic perception’ was explained. In addition to that the necessity of the integration of all senses into haptic perception was mentioned (see also chapter ‘The skin as tactile organ’). It was stressed that the term communication stands in connection with interpersonal interaction and that it is a rather complex phenomenon, which cannot be described that easily. Moreover the metamorphosis and development of the term ‘touch’ were depicted.

Starting from linguistic aspects a connection of touch and movement could be pointed out. Movement, and that also means change, can only happen if physical contact, or touch, was initiated before. Thus tactile (haptic) touch is an action which establishes a connection between people (Wagener 2000). The osteopath thereby uses his/her hands, in order to establish contact to his/her patients.

Our whole perception system forms the basis for our ability to perceive this contact, to feel. The visual as well as the acoustic one. All of them are specialised to realising changes of perception.

Especially in the constellation osteopath-patient it is of extreme importance to be able to interact ‘efficiently’ with others, as our occupational group follows the holistic approach. Thus the following chapter will treat perception and communication particularly under the viewpoint of the personality perception with all its aspects. As far as communication is concerned, the following chapter will deal with nonverbal communication. Furthermore different forms of touch, such as ‘sincere’ touch, procedural touch and sexual touch, will also be included.

### 3. PERCEPTION AND COMMUNICATION IN THE CONTEXT OF TOUCH

Osteopaths spend a certain amount of time at and with their patients. Thus it is necessary and important that our interactions, interpersonal behaviour and relations connected with our perception and tactile (haptic), procedural touch are 'profitable' and 'successful' (Forgas 1999).

A whole branch of psychology, namely social psychology, dedicates itself to the investigation of our social behaviour. The psychologist Professor Dr. Joseph Forgas from the University of New South Wales (Australia) has engaged himself in the European, Australian and American social psychology. His focal point is the investigation of interpersonal relationships of human beings. Thereby he focuses amongst other things on the interaction of 'professional interactors', such as physicians, psychologists and therapists in general. Thereby the reader should realise that osteopaths do not differ from any other therapists as they do work, as well as physicians and psychologists, with and at human beings and hereby establish contact to their patients by means of interaction. Forgas (1999) considers this interaction as necessity in order to achieve a 'profitable' and 'successful' intervention with patients.

Related disciplines such as social anthropology, also deal with social structures, but it is social psychology that investigates how human beings interact with each other [...] and how they are influenced by the actual presence of others (Allport 1924, Forgas 1999).

Before we deal with the skin as tactile sense (tactile touch) in the subsequent course of this paper, I would firstly like to dedicate myself to a subarea from social psychology, the personality perception as well as the nonverbal communication.

At the end of this chapter this shall be connected with the context of the osteopathic treatment. In the first part of this chapter I would like to give a short overview of the personality perception. At the end the following questions should be answered and an approximation, respectively, should take place: 'How important is it for an osteopath to gain an exact insight into the patient, i.e. into his/her personality?', 'Does this support or influence the therapeutic success of an osteopathic treatment?'

In the second part of this chapter nonverbal communication, which is one particular branch of communication, will be focussed. 'Which influence or which meaning, respectively, does communication/interaction between osteopath and patient have?' and 'In how far does this influence affect treatment?'

According to Forgas (1999) we have to be able to properly perceive people, in our case the patients we are confronted with, in order to be able to successfully interact with them. This is a primary and complex task, which should be explained subsequently, as the ability to perceive us and others properly requires skill. But what do perceiving and skill mean?

Dehn - Hindenberg (2007) states in her paper 'Patients' needs in physiotherapy' that psychosocial and communicative abilities are decisive for being regarded as being skilful by patients. Especially realising the patients' needs, explanations and information are important criteria for the therapist's competence. Ommen et al (2006) call this the 'consideration of emotional needs of patients' and stress that these criteria essentially contribute to a trusting therapist-patient relationship.

In addition to dedicating ourselves to others (patients) and to perceiving them, we also have to interpret our percipience adequately. According to Forgas (1999) hereby the first and decisive phase of this interpersonal interaction is the personality perception. For example we welcome our patients when they enter our office. Thereby, beginning with a handshake (tactile, ritual touch), we perceive aspect, appearance, communication (greeting) and thus absorb much information which we then interpret. What characterises personality perception?

For this purpose we have to mark-off object perception, which means the perception of objects within the physical world. It is based on identifying 'superficial' features of objects whereas personality perception is characterised by detecting 'hidden' traits of human beings (Forgas 1999). What are these 'hidden traits' then?

According to Forgas these are observations of so-called characteristics which are not directly accessible, but which have to be revealed. These characteristics are revealed by the patient during conversation – anamnesis – regardless of the reason for his/her consultation. For example his/her attitudes towards the reason for his/her consultation, his/her characteristics, his/her personal traits, such as friendliness, egocentrism, introvertedness, extrovertedness etc.

This makes 'judgements' in the course of a social perception process more complex and difficult. There is also, according to Forgas (1999), moments of impartiality. This means that we rarely ever decide 'judgements' uninfluenced by already existing feelings, attitudes and motives, transferences and countertransferences between patient and therapist (see end of the chapter). This phenomenon is called motivational bias by psychologists.

In the context of an osteopathic treatment this can mean that observations of patients and their behaviour during the treatment may lead to misjudgements. But how does successful personality perception work then?

According to Forgas (1999) hereby the perception accuracy plays an important role. On closer examination we have to find an answer to the question which characteristics of the person 'to be judged' are the 'actual' ones in order to apply a standard.

Tests are neither entirely reliable nor are they entirely valid and self-made judgements are not objective or unbiased, says Forgas. From this follows the conclusion that there is no standard which can be set and that we can only roughly describe perception accuracy. Subsequently this is the standard of which we know, however, that it is quite imprecise (Forgas 1999).

If we pursue the theory of Cronbach (1955), accuracy is not the sum of consistent characteristics of certain persons. It is rather a combination of many competences and factors that are, however, often not even related. For example, if we know the person very well and traits are immediately noticeable and thus do not have to be 'revealed'. Thereto class, as mentioned above, the characteristics of the person to be observed.

Besides perception accuracy also the so-called 'implicit personality theories' play an important role. By these we mean certain beliefs or ideas of the human being in general. Every interaction supplies us with information of different kinds. Starting from this wealth of information we have to approach the problem of accuracy of perception judgements.

Forgas (1999) comes to the conclusion that an accurate perception of emotions and personality traits decisively contribute to personality perception. Among emotions primarily count the facial expressions (cf. Landis 1924, Sherman 1927, Izard 1971, Sorenson & Friesen 1969) on the one hand (e.g. to be sad, to be happy, to be tense, to be relaxed). Forgas (1999) regards them as one special form of perception judgement and states that it is important to rank them higher than for example paying attention to whether someone is an extroverted, helpful, shy or dominant person. Despite this perception it is difficult to 'judge' one's opponent.

Psychologists, such as Argyle & Ginsburg (1979) come, in regard of personality, to the conclusion that this is nothing lasting or unchangeable. To a great extent it is influenced by our respective life situation und thus seem to appear in different light. Now, what does that mean?

A very open, extroverted and communicative person may appear as being introverted, reclusive or tight-lipped in a situation of pain. Despite those many interpretations and all 'difficulties'; what can we say about the 'accuracy' of perception?

Taft (1955) and later also Forgas (1999) dealt with research work in the field of accuracy of personality perception. Both come to the conclusion that results as well as statements thereto are controversial. There are no guiding principles for coherent criteria concerning 'accuracy' (reference to Cronbach 1955).

Taft et al. (1955), however, found out, that the ability for empathy has an influence on the ability of perception, i.e. that one can or wants, respectively, to get involved with others.

In spite of the observations mentioned above, Forgas (1999) regards accuracy not only as being a skill or competence, but a process, depending on several complex variables that are rich of components. Cline and Richards (1969) closely analysed these variables. According to them it looks as if stereotype 'accuracy' only is sufficient for an 'accurate' judgement of a person. This means that a subtle comprehension of the unique and individual traits of a person is less successful in personality perception than those general and typical traits mentioned above. And this, again, means that therapists (osteopaths) with too well trained psychological comprehension may tend to pay too much attention to the individual differences of people, i.e. that they tend to over-differentiate and thus read too many or even wrong things into the differences observed.

So far we have only investigated the side of the person to be judged. There is, however, another side - the side of the judging person, i.e. the osteopath. Schiffenbauer (1974) states that the 'judge's' own state of feeling notably influences the accuracy of his/her 'judgement'. This means that if we are good-tempered we tend to rather see our opponent's good sides than when we are ill-tempered.

Clark et al. (1984) detected that emotionally excited persons tend to regard others as being excited as well. Furthermore Schwarz (1984) found out that even superficial influences, as for example a pleasant room, may also influence one's power of judgement.

### **3.1. SUMMARY OF THE CORE POINTS**

By means of an overview the previous paragraph should have explained that in order to interact with patients we firstly have to perceive them.

- Concerning personality perception we have to mark off object perception from personality perception.
- Typical 'characteristics' of the patient have to be 'revealed', as they are not directly accessible.

- One's own impartiality endangers 'objective' personality perception. The therapist has to use his/her estimation ('judgement') with care and has to be aware of the fact that our perception of other people may often be faulty, incorrect and biased. On the one hand because typical sources of 'distortion' may be preconceived opinions and prejudices about certain types of person. And on the other hand because connections between single personality traits may be expected.
- There is no such thing as perception accuracy, which means no standard for the judgement and estimation of patients.
- Emotions and personality traits for personality perception have a mutual influence. They are, however, not rigid but derive from the respective life situation. Thus they are changeable.
- The ability to judge other people is no universal competence or skill, but depends on situation and the person to be judged.

To perceive and comprehend patients, to understand their behaviour and one's percipience are necessary first steps within the interaction process.

As mentioned above, personality is a necessary, but not at all sufficient, condition for the interaction process (Forgas 1999). Take the example therapist and patient: to perceive the other person is a precondition for the interaction process, but is not the interaction itself.

'How important is it for an osteopath to gain an exact insight into the patient, i.e. into his/her personality?', 'Does this support or influence the therapeutic success of an osteopathic treatment?'

According to Forgas (1999) we have to be able to properly perceive the patient in order to be able to interact successfully. Therefore communicative techniques of 'therapists' are crucial which are regarded as a sign of competence by patients. For an adequate treatment it is particularly important to detect and correctly interpret the needs of patients. Hereby personality perception is reckoned as the first decisive phase of each interpersonal interaction (Forgas 1999).

An accurate perception of emotions und personality traits significantly contributes to personality perception. To perceive the other person is a precondition for the interaction process.

Interaction itself consists – to a great extent - of the exchange of messages of communication. The next paragraph will deal with an approximation towards the question what actually communication is. Thereby especially nonverbal communication will be focussed. Furthermore different forms of communication that are relevant in the context of an osteopathic treatment will be mentioned.

What is communication?

The term communication comes from Latin ('communicatio') and means in this sense 'connection, message' (Dorsch 1994). Generally communication can be defined as a process in the course of which information is being transmitted from a sender to a receiver (Forgas 1999). Meggle (1997) regards it as a process of communicative problem solving. Thus there are three elements that influence communication:

(a) A sender (source) who (which) encodes a (b) message which is then transmitted by means of a (c) special channel to a receiver who, in turn, decodes the message. Sender, message, channel and receiver do all have certain characteristics and qualities and thus an impact on the communication process. As, for example, a physical device such as a telephone does not transmit any visual stimuli we have to adapt our communication process accordingly. Characteristics, such as power, status, intelligence or common interests of sender and receiver, but also the choice of communication strategy as well as the message itself contribute to communication.

On closer examination the definition mentioned above reveals its limits as it defines communication as a simple process. According to this definition a message is received or sent without any relation to the environment and to the sequence of past events or expected future events.

However, this definition has to be amplified with regard to the fact that communication is a dynamic, progressive process that runs into two different directions (Forgas 1999).

This means that persons involved send messages on the one hand but on the other hand pay attention to the signs of their opponent at the same time (cf. personality perception). Thus communication is a daily occurrence as we cannot avoid daily communication (Dorsch 1994). Furthermore Dorsch states that even tactile touch is considered as communication, however, as nonverbal communication.

On closer examination of nonverbal communication we can recover certain different aspects of personality perception.

What is nonverbal communication then?

According to Forgas (1999) nonverbal communication is form of interpersonal communication that consists only partly of verbal messages. Normally we transmit by using verbal language (e.g. sentences) a variety of nonverbal signals, which again reinforce our messages. They can modify or even substitute these. In case verbal communication is not possible, e.g. due to noisiness (building sites, great distance etc.), we can communicate by exchanging nonverbal signals (glances, a smile, gesture, change in posture etc.) instead of verbal ones (Forgas 1999). Without this ability of sending and receiving nonverbal messages, successful social interaction is impossible.

According to Schönplflug & Schönplflug (1989) nonverbal communication happens unconsciously. In many cases it is either the one or the other side that is aware of it. Thus the not-said is expressed by different modalities of sense, like acoustically, visually, olfactorily but also haptically.

Wagener (2000) calls nonverbal communication a frequently used system of signs while Schulz von Thun (1981) calls it a function for presentation, expression and appeal. Thereby he uses the term of explicit messages for describing verbal communication and implicit messages for describing nonverbal communication.

So far we have read several different general explanations and descriptions of nonverbal communication. To sum up Schulz von Thun (1981), writes that all information is like a bundle that contains many messages. Just that makes interpersonal communication that complicated and 'accident-sensitive'.

Furthermore he stresses that one could tend to assume that it is the explicit message that is the main message while the implicit messages are less important and side issues. But the contrary is the case: the real main message is often sent implicitly, i.e. nonverbally (Schulz von Thun 1981).

Starting from the sense modalities mentioned above now the aspect of haptic touch shall be outlined briefly (Schönpflug & Schönpflug 1989). Of which type can touch be and how does it influence communication? No matter if we welcome someone by means of a handshake, an embrace or a kiss on the cheek – most welcome and farewell gestures have got something to do with touch (Wagener 2000).

Neuhäuser - Metternich (1994) stresses that touch may also be an accidental contact in an overcrowded train. If the other person pats us on the shoulder during conversation, pushes a streak out of our face, or slaps us on the back, takes our hand or simply the legs touch- it is always a form of physical contact, i.e. touch, with others.

The so-called 'sincere' touch (Bevis 2001), which contains elements of nonverbal communication as well as 'the' element of tactile touch, is considered to be very important for a successful therapeutic intervention. Additionally it shows that touch is related to the context of communication. Subsequently I will give a brief overview of procedural as well as sexual touch.

### **3.2. SINCERE TOUCH**

Bevis (2001) regards tactile (haptic) touch as unique means of communication that basically differs from verbal language. According to Bevis it can transmit messages and emotions, which cannot be expressed in words. By means of touch different information can be passed on – whole 'contact units', as Bevis calls it.

Now, what does Bevis mean by a 'contact unit'?

There is no definition of contact unit, but the meaning shall be clarified with the aid of an example. We often try to verbally explain our patient at the first meeting that he can consider us as being trustworthy in order to make him/her tell us his/her real problems, in order to give him/her the feeling that he/she can cry in our presence, if he/she feels like it, that we will sincerely take care for him/her, that the consultation is absolutely confidential, that we would never consider his/her confusion as being something stupid or childish and that also adults should openly show their vulnerability etc.

Despite best rhetorical devices such a monologue would definitely be clumsy and awkward. However, tactile touch on shoulder or arm during the anamnesis talk can transmit all the information mentioned above and would clearly reveal the osteopath's attitude. Research as was for example done by Montagu et al (2004), have shown that touch often helps the patient to open up. A soft touch on the shoulder of an emotionally agitated patient, whom you are questioning, can make him/her break into tears. This happens because the patient develops a feeling of psychological security in his/her unconsciousness when being touched. This example makes clear in how far tactile touch is part of a therapeutic treatment.

To sum up one can conclude from this example that it is a moral obligation of every therapist to create a psychologically secure setting and surrounding. This contributes to the build-up of mutual trust between patient and therapist. According to Bevis nevertheless nobody can guarantee that feelings are received in the same way which they were intended to mean. Hereby nonverbal communication is applied (Bevis 2001).

Thus touch can be contradictory to verbal communication (Bevis 2001). If two people do not like each other, this is normally expressed in body language and the way of touch, if it comes to closer contact (Bevis 2001). In case verbal and nonverbal communication patterns do not correspond it comes to confusing messages and thus no mutual trust between therapist and patient is possible.

According to Bevis (2001) only the grossest outward movement patterns can be influenced deliberately.

As we will see in the following paragraph verbal and nonverbal communication do only play a minor role within the context of procedural touch.

### **3.3. PROCEDURAL TOUCH**

The clinical, also called procedural, touch is of technical nature. It is based on a mechanical-physical theory (Bevis 2001). The physician sets somebody's bone, the dentist fills a tooth, the osteopath manipulates. It is used especially in modern medicine on the one hand and in 'manipulative' therapy on the other hand (Bevis 2001).

It has got a merely technical and impersonal character and is manifested in many different methods, such as soft-tissue techniques, articulation techniques, muscle-energy techniques, cranio-sacral techniques etc. Bevis (2001) states that technology and science originate from reason and knowledge. They are no emotional disciplines even though they ironically evoke emotional reactions. The use of procedural touch happens within a technological context but nevertheless can and should be applied respectfully and thoughtfully (Bevis 2001). By searching available literature concerning procedural touch one comes to the conclusion that it shows an inappropriate strong tendency towards physiological explanations and a man-as-machine viewpoint.

Boyling & Palastanga (1994) in Grieves „Modern Manual Therapy“ point out the failure of modern medicine. Their work deals with the fact that by means of successfully treating the wide spread syndrome of backache costs could be dammed and the quality of life could be improved. Like Zusmann (1994) they come to the conclusion that medicine has to accept that „keine einzige Behandlung wirksamer als die andere ist – keine Behandlung erfolgreicher ist als der natürliche Krankheitsverlauf oder der Plazeboeffekt“ (Zusman 1994).

[not a single method of treatment is more effective than another one – no method of treatment is more successful than the natural course of disease or the placebo effect.]

This would, however, mean that neither sincere nor procedural touch takes effect or plays a role, respectively, in the osteopathic treatment. Thus the questions, placed at the beginning of this chapter, would be generally answered by means of the observations of Boyling & Palastanga (1994). Daily practice looks certainly somehow different.

By means of contraposing sincere touch and procedural touch we notice that the essential difference is the kind of approach. The 'technical' character of procedural touch stands in contrast to the emotional aspect of sincere touch. To consciously touch a human being means deliberately getting involved with nonverbal, from 'skin-to-skin' communication (Davis 1994, Montagu 2004), not matter whether it's sincere or procedural touch.

For Wagener (2000) every bodily contact is potentially sexual touch. This applies to the whole topic of touch and becomes only clearer within the context of sexuality (Wagener 2000). As we as osteopaths have to touch people daily, we have to be aware that the aspect of sexual touch is permanently present to the patient. This is why I would like to investigate this aspect in the following chapter.

### **3.4. SEXUAL TOUCH**

According to Wagener (2000) hereby perceptions and sensations of touch by others and by ourselves are clearly marked-off. Wagener states that sexuality is a taboo subject. Together with sexuality many ways of touch were suppressed and displaced into a sphere of absolute privacy. Just this tabooing of sexuality and eroticism results in the reinforcement of the meaning and subtle presence of the taboo subject. Montagu (1974) hereto writes that sexuality is widely used as a simple medium to discharge drive tensions instead of regarding it as the deepest mode of communication within a differentiated human community.

Sexuality is affected by social, religious and moral attitudes, norms and conventions (Bevis 2001, Montagu 2004). Although we were all born with the 'skin's hunger' for touch, according to Davis (1994) we manage to supply this want only to a certain degree. If in our adult world the only source for touch are professional and sexual contacts it would be hardly surprising if this unfulfilled desire for gentle, comforting and soft touch as well as for emotional and bodily nearness leaves its mark in the form of health impairment (Boadella 1994).

This is something that osteopaths daily experience in their practice when they perceive the patient, touch, palpate and communicate with him or her. There is a smooth transition from sincere to procedural touch and from there to sexual touch and we, as osteopaths should always be aware of that.

Dr. M. H. Hollender from the psychiatric department of the University of Pennsylvania comments within the framework of his study on the need for bodily contact. Hollender & Kollegen (1969) came to the conclusion that the need for being embraced or stroked differs, like every other want from person to person and from time to time.

Lowen (1969) published a number of case histories about women who had received very little tactile stimuli during their childhood and who later ran themselves into sexual experiences in order to get contact to their own body. According to Lowen the interest for sexuality can thus not be compared with the need for touch. It satisfies only the need for closeness to a human being. Thus osteopaths are not in danger of getting a reputation of seeking sexual contact.

After having outlined the three forms of touch I will now turn to the differences between verbal and nonverbal communication.

According to Forgas (1999) nonverbal communication is not simply an alternative to verbal language. In contrast to verbal communication in nonverbal communication decoding messages and reacting to them happens immediately and automatically.

This means that the mere presence of two people (patient – therapist) is already communication. If one of the interaction partners is smiled at, is gazed at or anything similar in most cases an immediate interpretation and reaction follows. There is no need for analysis or conscious decoding (Forgas 1999). Unconsciously we understand within shortest time what our opponent wants to communicate while during verbal communication we need much longer to encode and decode and to send relevant answers (Forgas 1999).

Ekman & Friesen (1974) constructed the hypothesis that peripheral stimuli, as for example body movement or the movement of arms and legs can be controlled less consciously. From that they concluded among other things that thereby liars can be made out more easily than by central stimuli, such as facial expressions or glance behaviour. Their results clearly show that body messages reveal more about a person's real state (tension, excitement etc.) than head messages over which the patient has better control and about which he/she can communicate verbally (Ekman & Friesen 1974).

From experience osteopaths know that 'something said' may differ significantly from something that is 'seen' or 'felt'.

'Which influence or which meaning, respectively, does communication/interaction between osteopath and patient have?' and 'In how far does this influence have an effect on the treatment?'

It influences the treatment in so far as the osteopath may thereby meet the patient more individually with his/her personality perception and interpretation of the percipience. Furthermore this touch causes the patient's to opening and thus his/her trust in the treatment.

A further difference is that the patients' attitudes and emotions are tendentially transmitted more effectively by means of nonverbal communication than by verbal communication. 'But what happens if nonverbal and verbal communication differ from each other to such an extent that the therapist has to opt for one 'system' in order to be able to administer to the patient?' and 'Which of the two contradicting systems has greater influence on the 'observer'?''

Henley (1988) stresses that nonverbal communication is doubtlessly and important factor of human coexistence. It is the standard by which words and intentions are being measured. Argyle et al. (1970) as well as Argyle, Alkema & Gilmour (1971) emphasise this statement as they say that nonverbal messages are much more convincing than words; especially in conversations in which superiority and inferiority or friendliness and unfriendliness play an important role. Wouldn't it be then advisable to convince patients that practitioners (osteopaths) can by no means be regarded as being 'superior'? And isn't there the imminent 'risk' that a power relationship between patient and therapist develops because of this 'superiority'?

Especially in such a constellation of power and control it is important to pay attention not only to the **dont's** but also to the **dos** of touch and contact behaviour (conventions) (Wagener 2000). An important precondition for touch is the mutually assured readiness therefore. Power is expressed when touch is initiated and wanted only by one side. According to Hoffmann-Axthelm (1994) this displays potential power; in respect of private, friendly and intimate contacts as well as in respect of professional, procedural, therapeutic contacts.

As mentioned at the beginning of this chapter it is a complex and difficult task to make oneself a 'picture' of the patient in the course of a social perception process. Besides the so-called impartiality there are additionally the complicating phenomena of transference and countertransference between patient and therapist. Anzieu (1991) sees the problem on the level of sexuality, gender membership, topics such as power, narcissism, dependency and independency etc. What do transference and countertransference between patient and therapist mean?

Descriptions of feelings which are triggered off by touch are called countertransference phenomena. Freud (1905) talks about transference in connection with fantasies, which can be awakened by the tactile touch of the therapist. Thereby a person that was part of the patient's earlier life is substituted by the therapist. Thus a past relationship is being 'awakened' via the current relationship to the therapist.

In another text Freud (1912) Freud describes the countertransference phenomenon as a cliché (or more than one) which is repeated in the course of one's life regularly. It redevelops if external circumstances or nature permit it. According to Freud (1912) this part is devoted to the here and now. It is available to personality and in addition that is even part of it. Another part, called 'libidinous' impulse, is impeded in its development and kept off from conscious personality and reality and was thus allowed only to spread within fantasy and to fall in love only in the framework of unconsciousness. From that it follows that it is unknown by the conscious personality.

If now this libido is not completely satisfied by reality, the patient has to turn towards every new person that enters his/her life with these libidinous expectations. Thereby it is highly probable that conscious as well as unconscious level share this attitude (Freud 1912).

According to his findings it is thus absolutely normal and understandable if this expectantly held ready need for love and affection (libido cathexis) of the partly unsatisfied patient is turned also towards the therapist as a person. Thereby the therapist is being integrated into the psychological sequence the sufferer has formed so far (Freud 1912).

Concerning his patients Freud distinguishes here between father – child – relationship on the one hand and mother – child – relationship on the other hand. But also a very close relationship between siblings may be regarded as being the cause for transference phenomena. To a certain extent the particularities of transference to the therapist can be justified rationally. This becomes clear when we bear in mind that there are not only conscious expectations but also the unconscious expectations, which are kept back, that cause transference (Freud 1912). To say it with Freud's words (1912): transference is 'the most powerful device for success' but also 'the strongest instrument of resistance' (Freud 1912).

Apart from explaining projection and transference between patient and therapist, Freud (1905) was furthermore the first one to describe the so-called **countertransference phenomena** between therapist and patient. Kätzig (1999) regards them as the therapist's own feeling, expectations and desires (triggered off by the patient's transference) which the therapist transmits to the patient. Since the reflection of Freud's concept, countertransference has been no longer perceived as disturbance but has rather been investigated as a possible instrument for therapy (Kätzig 1999).

Put it simply, countertransference is the reaction of the analyst to the transference of the patient. Sandler (1973) sees many different causes and possibilities of countertransference. Here a few examples:

Resistance in the analyst due to an activation of inner conflicts, transference of the analyst, communication problems between analyst and patient, personality traits of the analyst which are reflected in his work. Perhaps just these phenomena (detraction of the therapist caused by certain characteristics of the patient, a specific reaction of the analyst because of the patient's transference etc.) lead to difficulties in the therapy. Sandler (1973) hereby talks about an 'appropriate' or 'normal' sentimental reaction to the patient on part of the analyst. This reaction can be an important therapeutic instrument and the basis for empathy and sympathy (Sandler 1973).

Little (1951), in turn, regards the subjective countertransference as a possible way into the patient's unconsciousness. Thus the therapist should absolutely adhere to these feelings. Kemper (1954) regards the complication of countertransference as motherly, warm-hearted and caring helpfulness, as for example too early advice instead of allowing own experiences, early consolation, the patient seems to be like a helpless and dependent child, feelings of almightiness and unsatisfied affective need for contact on part of the therapist; especially if his/her private life offers too little libidinous as well as narcissistic satisfaction or if his/her own life situation is unsatisfactory concerning sexual or affective needs. Hereby Little (1951) sees a danger for 'abusing' the patient in the way mentioned above; to take from the patient what the therapist misses in private life.

This may express itself by means of impersonal, strict behaviour, spartan hardness, which expresses the fear of oversoft behaviour, compliance and benignity. Or in case of beginners who have to fear for their existence: they could tend to make concessions during the analysis, e.g. being too friendly, interpreting too early or too fearfully, because they think they have to be a perfect, omniscient expert for the patient wont bethink the idea of changing therapist (Kemper 1954).

After having given an overview of different forms of touch within the context of communication, I would like to turn now to the communication channel within the framework of nonverbal communication. Is this channel used during interaction?

As mentioned above we send and receive nonverbal messages via several channels simultaneously (Forgas 1999). According to Forgas (1999) these channels involve our glance, facial expression, posture, gestures, quality of voice, clothing and distance behaviour. These channels communicate simultaneously as well as coordinatedly among each other but are, however, sent unconsciously and very often senders as well as receivers are not even aware of them (Schönpflug & Schönpflug 1989).

It would go beyond the scope of this paper to deal with every channel separately. As the topic of this thesis is touch in the following nonverbal aspect of touch and body contact, respectively, shall be explained. Tactile touch ranks among the most important nonverbal signals of our first years of life and make up a big part of the early communication between parents and child. On the other hand body contact between adults follows strict and complex cultural conventions. This means that there are strict rules when, where and how touch may happen. Within the framework of his research Jourard (1966) asked 300 Americans of either sex, who is allowed to touch their body. Thereby nearly all test persons agreed concerning their allocations (cf. Fig.)

A summary of nonverbal communication models

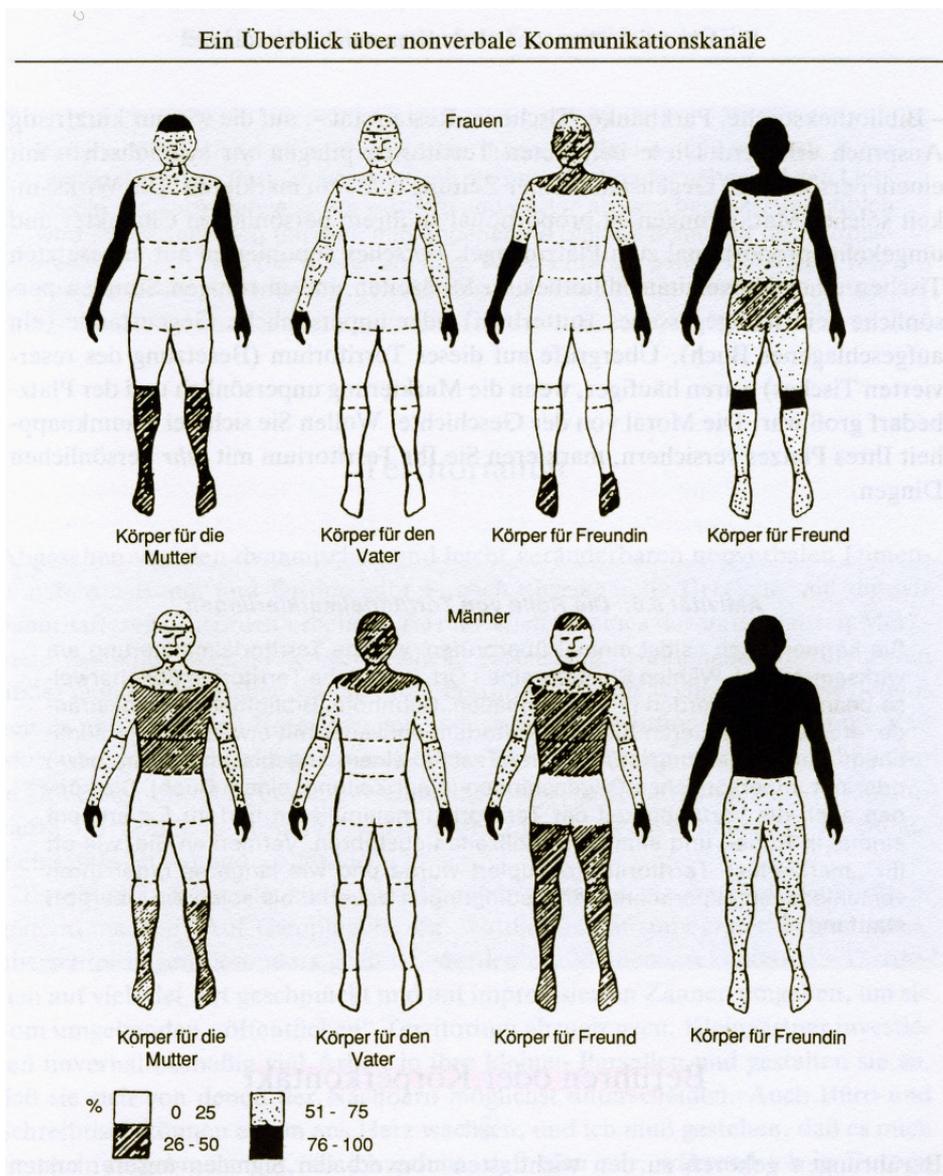


Fig.1 (Forgas: Social Interaktion and Communication 1999, pg. 154):

Touch rules

Body areas of the mother, father or friend of the same and the other sex may be touched (Nach Jourard 1966, S.229)

However, it has to be mentioned that this result is very culture specific and may look differently among other cultures. In our western world soft touch signalises intimacy and interest and causes a slight reaction of excitement. Furthermore it may signalise and express power and sexuality.

On the other hand touch can have a positive influence on the attitude of the person touched, even if this person is not aware of being touched. Fisher, Rytting & Heslin (1976) conducted a simple experiment concerning this. A librarian had the order to accidentally touch students while she was giving them their books and in addition to that had to ask them several questions. While this touch had no impact on men, women developed after this a positive attitude towards this library as well as towards themselves. This proofed that touch has a different impact on men than on women. By means of another experiment Whitcher & Fisher (1979) could verify this observation. Mostly touch is of ritual character.

Heslin & Boss (1980) carried out an observation test at the airport and found out that touch happens in 60% of farewell situations. Furthermore there are many more findings concerning sex differences, status, touch and dominance (which signal a form of power).

### **3.5. SUMMARY OF THE CORE POINTS**

To sum up the previous chapter we can call to mind the following points:

- Generally communication is defined as a process, in the course of which information is transmitted from a sender to a receiver and which runs in both directions.
- Three elements influence communication: sender, message, receiver.
- social interaction, i.e. sending and receiving verbal and nonverbal messages, requires more than communication skills.
- The therapist's psycho-social and communicative abilities are part of a therapist's competence. Especially realising the patients' needs and providing explanations and information rank high among therapeutic competence.
- Personality perception has to be marked-off from object perception.
- Personality perception is characterised by revealing 'hidden' characteristics of people.
- Accuracy of perception cannot be measured by means of a standard.
- An accurate perception of the patient's emotions and personality traits on part of the therapist significantly contributes to personality perception.

- Personality is neither lasting nor unchangeable. To a great extent it may be influenced by the current life situation.
- The ability for perception is significantly influenced by the therapist's ability for empathy.
- Nonverbal communication happens unconsciously by means of different sense modalities (acoustic, visual, olfactory or haptic)
- Every touch is a potentially sexual touch.
- It is important to pay attention to the '**dos**' and '**dont's**' of touch (i.e. conventions)

In the course of this thesis we have now seen definitions and idioms concerning the terms touch – perception – communication. Subsequently we have illuminated perception and communication with regard to their subareas of personality perception and nonverbal communication. In the following chapter I would like to turn to the accretion and the development of the tactile sense. This chapter shall lead to the topic of tactile touch of the hands as tactile organ. Thereby it will be dealt with the prenatal accretion and the development of a human being. Step by step the reader should be able to understand what a meaning and impact tactile touch has got.

#### **4. ACCRETION AND DEVELOPMENT OF THE TACTILE SENSE**

„[...] die Finger dienen als Antennen oder Fühler, die die Umgebung abtasten, ehe das Kind sich bewegt“, sagt Lowenfeld (1947). [Lowenfeld (1974) say that the finger act as antennas that scan the surrounding before the child is able to move.] A child basically perceives all impressions via the skin by means of touch (Montagu 2004).

The human embryo develops the tactile sense before all other senses. From the seventh week on the skin reacts to tactile stimuli (Frank 1957). In the womb the foetus makes many different kinaesthetic and tactile experiences by means of blast waves. According to Burton & Heller (1964) tactile sense enables the newborn to orient itself on the mother, i.e. in life. A child feels his/her mother a long time before he/she is bale to see her.

During the time of breast feeding skin contact and manipulation of the breast are of the same importance as the intake of food itself (Montagu 1974). These and also other movements are felt as being encasing and highly pleasant tactile experiences and satisfy all needs. The foetus is safely held from all sides (Bevis 2001, Montagu 2004). Numerous studies (see and cf. e.g. Spitz, 1955; Greenwald, 1958; Harlow & Zimmermann, 1959; Winnicott, 1965; Bowlby, 1969; Klaus & Kennell, 1970, 1976; Montagu 1986) prove that among other factors this psychological nearness of the mother on the one hand and the physical nearness of tactile touch on the other hand are of great importance for the bodily and mental health of the suckling and also for the well being in the later life as an adult. Postnatally (after birth) all the others immature senses are developed, such as seeing, hearing, tasting and smelling.

Montagu (1974) writes, that the mere feeling of being touched stimulates the newborn and is thus of vital importance for the physical life of the organism. In this sense we have to acknowledge that the want for tactile stimulation is part of the fundamental needs of vertebrates as well as of spineless animals (Montagu 1974).

Only the totality of tactile experience (where to also proprioceptive as well as kinaesthetic sensations belong) makes self-awareness possible. At the beginning of everyone's life the self is a bodily self; the world of the suckling is above all a tactile world (Bevis 2001, Montagu 2004).

Furthermore touch is a means of communication in case verbal communication is hardly possible or not possible at all and is used, for example, in contact with babies, old or sick people. Thereby touch is not only regarded and used as a means of contact and communication but also as a means of healing (Nelson 1996, Rohmann & Elbing 1990).

According to Davis touch is the most important means of communication in the whole course of the child's development; all the other forms of communication are more or less of a merely complementary character. Facial expressions and gestures have their own meaning and the voice begins to form recognisable words (Davis 1994).

According to Davis (1994) the first tactile experiences are the suckling's main means of orientation in his/her new world. They are physiological stimuli. They change and refine in order to be translated step by step into highly sensitive forms of interpersonal communication by means of gestures, facial expressions, pitch of voice and language. Wagener (2000) regards lacking skin contact as being a possible cause for a poor development on the way to adulthood as well as for the whole sexual development. Wouldn't that mean that as a result touch gains in importance for the work with patients, whose 'problems' originate in earliest childhood even before language acquisition?

Particularly feelings are hard to be put in words and this makes it so difficult to communicate them (Montagu (2004) and Wagener (2000)). By means of this statement the meaning of personality perception and its interpretation as well as the importance of understanding nonverbal body language on part of the therapist is verified.

Moser (1990) dedicated his work to families who have never learned to put feelings in words and furthermore not even have learned to sense and perceive their feelings. It is sometimes helpful and even necessary to use bodily interaction as an early form of symbolising for such patients, with the therapeutic aim to find a way out of this impenetrable 'jungle' that must seem confusing and even threatening to them. Hereby language and touch complement each other for their communicative effect. Thus touch is a possible way of approaching the 'preverbal world' (Moser 1990).

Montagu (2004) does not think that language should be substituted by another form of communication, but that it should be complemented by means of touch in order to give people the opportunity of an option

Furthermore she states that during latency in particular boys but also girls search less for contact to their parents than in other periods of life. During adolescence tactile sensation becomes strongly perceivable and from that life-time period on the need for being touched and for touching increases. In the course of further development the need for touch becomes stronger. It is an essential aspect of each and every sexual approach and during the sexual act. The experiences the child had – whether it was positive skin contact or a lack of touch – are decisive for his/her capacity of reaction as man or woman. The tactile-cutaneous sensitivity of the sexual organs during the period of adolescence is intensified and becomes to the centre of sexuality of men. Women, however, keep the skin sensitivity of a child, which is spread all over the skin.

Touch sensitivity of breasts, labia and clitoris, is however, higher than any other. (Montagu 2004)

Prof. Zimbardo (1985) from Stanford University, California investigated another aspect or level, respectively. He calls the reaction of the whole organism to touch 'perception'. In his work he investigates the secrets of the "dark sides" of behaviour. He describes this by means of influence by external situation- and system powers. These have got an impact on the individual person (Psychologie Heute 2001).

What a person perceives in the end depends on the extent to which receptors are stimulated via stimuli, depends on what stimulates them and which information this stimulus contains. Transferred to a person this means it depends on who this person is, with whom this person is, what he/she expects and what he/she wants and appreciates. (Zimbardo 1985).

Let us think of the example mentioned above by means of which we explained which impact tactile touch on arm and shoulder may have during anamnesis talk and how it can transmit the attitude of the therapist to the patient without the use of words. (Montagu et al 2004). This makes clear how important tactile contact is within the context of therapeutic treatment.

#### **4.1. SUMMARY OF THE CORE POINTS**

To sum up we can say

- that a child mainly receives all impressions via the skin by means of touch (Montagu 2004).
- that tactile sense is the first human sense the embryo develops before all other senses already during the seventh week (Frank 1957).
- that skin contact and 'manipulation' of the breast are of great psychological importance for the suckling (Montagu 1974)
- that by means of numerous studies it was shown that psychological and physical nearness by means of tactile touch are significant for the suckling's bodily and mental well being.
- that the want for tactile stimulation is part of the fundamental needs (Montagu 1974)
- that touch becomes an important means of communication if verbal communication is hardly possible or not possible at all.
- that lacking skin contact affects the process of growing up as well as the sexual development.
- that touch is perception, i.e. perception happens by means of stimulation of receptors on the skin.

On the basis of the previous chapter on accretion and development of the tactile sense the reader is able to realise that tactile touch – perception and communication in the form of nonverbal communication are essential for us as human beings. In order to comprehend (German ‘be-greifen’) our environment we have to learn to touch (German ‘greifen’), which means to use our hands and fingers in order to take up information (stimuli), which are then transmitted to our brain. Thus the following chapter shall deal with ‘hands’ on the one hand and with ‘skin’ on the other hand. I would like to start with the following: ‘One touch – two sensations’.

Subsequently a few terms, such as mechanical resistance, manipulation, prehension, stage of contact, kinaesthetic perception, tactile perception but also the holistic view of touch will be explained.

## 5. THE HANDS AS TACTILE ORGAN

If we look at our hands we come to the conclusion that we can use these instruments merely mechanically on the one hand, but on the other hand can also use them for emotional purposes (Bevis 2001, cf. chapter perception and communication).

### **One touch – two sensations**

Wagener (2000) concludes that touch causes a reaction as well as feelings. Moods develop, change or are confirmed. All that happens when we touch, palpate and examine a patient with our hands. Even during anamnesis. Again I would like to refer to the example of touching the shoulder of an emotionally agitated patient here (cf. chapter perception and communication).

According to Wagener (2000) the estimation of a person or a situation is influenced. We feel or sense something and then we react. Thereby it is not important at all how 'strong' the respective tactile impulse is or if this impulse is 'transmitted' via verbal communication (Bevis 2001).

I would like to give Handy (1949) as an example as he tries to show on the basis of the primary respiratory mechanism of human beings that by means of the slightest impact of power we can impact on people in a 'tactile-haptic-procedural-therapeutic'. He talks about 'being in touch', 'come into contact' with the tissue. Thereby one can impact on the tension equilibrium of fascias, ligaments and muscles. Hereby osteopaths use different techniques (Handy 1949, Sutherland 1991) and try to palpate by means of 'force effect' (5 – 10 g pressure) different tension and vibration patterns of the tissue. The better the osteopath is able to adapt him-/herself to this tension of the tissue using his/her hand or another touching part of the body the more resonance develops between hand and tissue. (Liem 2006).

On the one hand the osteopath thereby receives information necessary for diagnosis and treatment (Bevis 2001). And on the other hand this resonance can be established on many levels, e.g. the emotional level.

If we touch and palpate each other, this touch happens on our skin; we perceive it by means of the senses of the skin (Wagener 2000). The tactile sense is one of our five senses (Montagu 2004). If we actively touch someone we normally do so by our hands as it is the handiest of all our body parts if we have to feel out something such as e.g. tensions.

From an orthodox medical point of view, sensations need tracts by means of which it receives certain physical information. This 'knowledge' is then interpreted with the aid of cognitive abilities. By additionally using affective abilities certain qualities are then assigned. Thus human sensations consist of psychological as well as of physical aspects. Eyes, ears, nose and taste are also sense organs that know their corresponding areas of the brain. (Lobus olfactorius, visual cortex etc.) (Kahle et al 1991).

Pawluk (1997) talks about a holistic model of contact and the so-called 'hand-object system'. If one touches something with his/her fingers the contact starts at a little point. The resulting pressure distribution on the skin surface significantly decides on the behaviour of the 'hand-object-system' at the manipulation of the object.

She considers not only the neurophysiological and psychophysical aspect of touch but furthermore also models mechanical effects. Empirically this system can be measured at two spots only: one the one hand the mechanical strain on the skin surface and on the other hand the resulting nervous signal can be measured.

In addition to that Pawluk (1997) also examines the mechanics of the skin, which plays an important role when touch happens. In case of skin contact the skin surface is deformed. Epidermis as well as the underlying dermis and epidermis are affected. In case of tactile touch two forms of skin deformation can be distinguished (Pawluk & Howe 1997).

Loomis & Lederman (1986) call these tactile stimuli and kinaesthetic stimuli (perceptions). They include all aspects of touch using one's hands. By means of his hands the human being comes into contact with his/her environment by 'touch'.

The important meaning of tactile information is best realised when it is missing: when it is very cold the haptic system becomes really insensitive and thus precise manipulation is hard to achieve (Böhme 1999 & Zwisler 1998). The interaction of hands and objects lead to deformations, change of temperature and vibrations on the skin surface. Thus different information is being received (Böhme 1999 & Zwisler 1998).

Furthermore Böhme and Zwisler found out that the receptors of the fingers sense touch already 200 milliseconds after contact. With the aid of our fingertips information concerning qualities, such as temperature, surface structure and consistence are received. In case touch with the whole hand is possible information about form, size and arrangement can be received (Böhme 1999 & Zwisler 1998).

Concerning the perception of the environment by means of the tactile sense one can distinguish two mechanisms (Loomis & Lederman 1986, Böhme 1999 & Zwisler 1998):

‘Kinaesthetic stimuli’ inform about the inner state of a certain part of the body by parameters, such as the angle of the joint or muscle tension. They are triggered by afferent information from muscles, joints etc. as well as by the efferent copy from the hind brain.

‘Tactile stimuli’, however, are directly transmitted by the sensors in the skin. They inform about pressure, temperature, pain or vibrations. The four most important kinds of receptors can be classified according to their size, their receptive field and their speed of adaptation (slowly adapting receptors give information about the form of the surface touched).

According to Loomis & Lederman (1986) touch sensitivity is the precondition for nearly all motor activities. As for example to perceive objects and physical configurations in case of poor sight and for the identification of surface qualities (like temperature, flexibility etc.).

Böhme (1999) & Zwisler (1998) say that touch sensations cannot always be perceived as coming from the body. In case we check the surface with the aid of a pen, its vibrations are perceived as belonging to the surface (externalization of experience).

In case facial sense and tactile sense are used simultaneously, according to Böhme (1999) and Zwisler (1998) the facial sense dominates.

Besides cognitive strain and attention mainly spatial and temporal sensitivity of the tactile sense define its limits. An ideal transmission of information via skin is thus possible in this 'border area' of spatial and temporal limits of sensitivity.

1. quickly adapting, small receptive field (Meissner's tactile corpuscles);
2. slowly adapting, small receptive field (Merkel's cells);
3. quickly adapting, big receptive field (Ruffini - ending);
4. slowly adapting, big receptive field (Paccini - corpuscles).

From a functional point of view also the differentiation between active and passive touch has to be considered (Loomis & Lederman 1986). Kaczmarek and Bach-y-Rita (1995) present a more precise classification of tactile perception:

1. static or moving stimuli (as compared to the skin);
2. deliberate control over this movement or not;
3. spatial information as the skin moves along a surface or because the surface moves (windowing);
4. kind of stimulation (static, mechanic, electrotactile or vibrotactile).

Empirically it shows that distinguishability of simple patterns hardly depends on the differences mentioned above (Kaczmarek & Bach-y-Rita 1995). But only if spatial accuracy is not investigated. If a very accurate and exact spatial differentiation is necessary, the moving variants are superior, regardless of whether these movements can be controlled or not.

A holistic view of touch (Pawluk 1997) does not only look at the different receptors but also at the following fundamental components:

1. Mechanics of the skin (which is deformed during touch);
2. Mechanics of the terminal nerve corpuscles of mechanoreceptors;
3. Development of the receptor potential and
4. Triggering of the action potential.

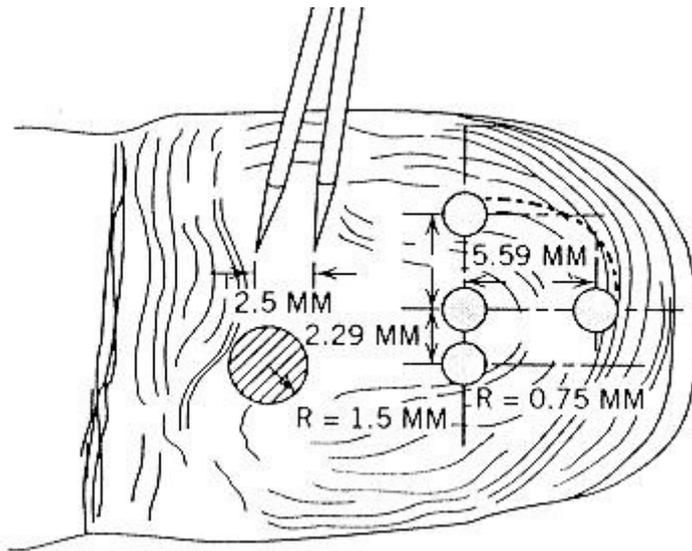
James J. Gibson (1973) represents a rather functional view of perception. He regards perceptual systems as hierarchically organised organs, which are activated in case of the presence of certain information. So it is not only the eyes that contribute to visual perception, but also head and body movements. Thus the whole visual system is able to recognise certain structures. Thus perception is a basically 'active process' towards the reaction of environment. The explorative procedures, described Lederman and Klatzky (1997) underline this.

In how far do tactile perceptions differ from kinaesthetic perceptions?

### **Tactile perception**

We sense contact via the tactile sense and by means of muscle sense, we form a view of the structure of objects we have touched. The points of skin that convey pressure perceptions are called pressure points. If there is body hair, those receptors are linked to the hair and so pressure is conveyed by means of leverage. The human being has 600.000 of such pressure points, but they are distributed individually. They have the highest density at the fingertips, where there are averagely 23 pressure points per square millimetre. On the palm are about 15.000 pressure points.

The minimum distance between two so called points of a compass in order to try when they are perceived as two separated points, is decisive for the fineness of the tactile sense. According to that one could pose the question, if somebody is a 'good' osteopath if his or her tactile perception is finer? Are his or her fingers more sensitive and consequently can touch 'better - more accurate - more sensitive' if the density of the pressure points is increased?



(fig.2: Lederman and Klatzky 1997)

This for physical separation of perceptions important value is named as spatial threshold. This value varies with the various perceptions.

The free nerve endings near the skin surface are considered as the organs of pain perception. They respond to stimuli of all kinds. Among the skin sense organs the pain points are ranked first with a number of 3-4 millions. The following chart shows the point density of the skin senses for the different kinds of perception of the hand.

	heat	cold	pressure	pain
palm	0.4	6	15	203
back of the hand	0.5	7	14	188

Fig.3: Point density of the skin senses of the hand per square centimeter

## **Kinaesthetic perception**

It has already been mentioned that this kind of perception is connected with position and condition of the muscles and joints. Those factors depend on sex, age and skilfulness. Thereby you can differentiate between hand grip and tip pinch. Within the hand grip you use the whole hand for contact, within the tip pinch you use only the fingers for grabbing. Hajian and Howe (1996) dealt with the different aspects of usage of hands in order to manipulate objects. First of all, they name a few characteristics of the hands. The structure of the hands is very complex (lots of joints and muscles that are partly placed in the hand, partly in the forearm). The hands have:

- 20 degrees of rotation (four at each finger);
- wide reach of various powers (some milligram to several kilogram can be moved);
- a very high density of mechanoreceptors, namely about 17.000 within every hand;
- hands have their own reflexes (if the object in one's hand starts to glide, the grip force is increased);
- fingers can be used parallel;
- while grabbing an object, opposite forces are exerted.

Hajian and Howe (1996) examined several stages of interaction between the fingers and an 'object':

**Stage of contact:** On the basis of the high receptor density in the fingertips, the point of contact can be located exactly. After 200 milliseconds after the contact, information about the 'object' is available.

At this stage, the passive mechanics of the skin surface play an important role. Gentle touches lead to deformation of the skin. The larger the force gets, the more the stiffness of the finger system is increased.

**Prehension:** Toprehend an object, a special configuration of the fingers is necessary. Which version is used mainly depends on the intended usage of the object. In this context, Hajian and Howe (1996) distinguish between „power grasps“ (aim is stability,

security and large force; embracing with the whole hand) and „precision grasps“ (aim is sensitivity and skilfulness; grabbing with fingertips).

The complementarity of arms and hands is often used: hands provide the necessary stiffness and precise mobility into the wanted direction. Arms are used to bring the hands into the best direction.

**Manipulation:** Tasks, that require the hands for grabbing an object, are supported by the arms within manipulation. Objects can be hold, scrolled and groped at the same time. The mechanical interaction within the region of the fingertips can define the attitude of the hand-object-system clearly. Hajian and Howe (1996) also report, that the empirical measured force of holding is slightly above the forces necessary to avoid the slipping of the object.

**Mechanical resistance:** the mechanical resistance is used to describe the interaction between parts of the body and forces and movements that influence from the outside. Hajian and Howe (1996) examine this correlation on the example of the turn while drumming: a skilled drummer uses the backlash to place a second beat very quickly. In this manner a fast drum roll is achieved. The frequency of this drum roll is regulated by means of the stiffness of the finger-drumstick-system (that means the force with which the drumstick is hold).

## 5.1. SUMMARY OF THE CORE POINTS

At the end of this chapter a summary by means of an outline of the core points shall be tried and the hands as tactile organs with their numerous characteristics and peculiarities shall be considered holistically.

- ‘very gentle’ touches generate reaction and feeling (Wagener 2000) and thereby sentiments arise, are changed or approved.
- from an orthodox medical point of view, perception belongs to one conductive tract to convey specific physical information (Pawluk 1997). Contact is considered as a holistic model since neurophysiological as well as psychophysical aspects play a role.

- the 'system skin' is empirically 'measurable' only in regard of two aspects: the mechanical strain of the skin surface and the resulting nervous signal.
- if the skin comes in contact with something, the skin is deformed (dermis and epidermis) (Pawluk 1997).
- the haptic system becomes very insensitive at low temperature and consequently precise manipulations are not that easy (Böhme 1999 & Zwisler 1998).
- interactions between the hand and an object lead to deformation, change of temperature and vibrations of the skin surface. Diverse information is won via receptors within 200 milliseconds (Böhme 1999 & Zwisler 1998)
- in regard of the tactile sense two mechanisms can be distinguished (Loomis & Lederman 1986, Böhme 1999 & Zwisler 1998): 'kinaesthetic stimuli' and 'tactile stimuli'.
- due to various systems (Meissner-Merkel-Ruffini-Pacini) a high sensitivity is possible
- from a functional point of view one has to distinguish between active and passive contacts (Loomis & Lederman 1986)
- a 'holistic' point of view of contacts (Pawluk 1997) via tactile perception, kinaesthetic perception, stage of contact, prehension and manipulation is assumed.

The reader can see that that tactile organ hand is structured very complexly in respect of this summary. Also the 'unbelievable' variety of possibilities to influence the patient reflects within this passage. Touch – perception – communication are consistent with an osteopathic treatment.

Now that we have considered the different characteristics of the hands, the topic of the following chapter will be the skin. The histological structure of the hand, physiology and single aspects like the haptic-somatic sense system, proprioception, somatosensory perception, temperature sense, pain reception, tactile sense, nervous system and central proceeding mechanisms (forwarding and proceeding) are regarded.

## 6. SKIN

Construction of the human skin with skin appendix thing

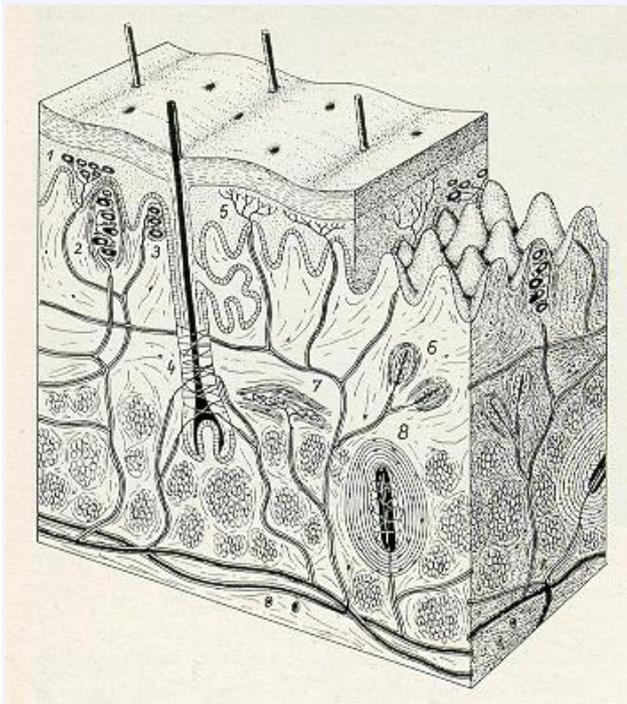


Fig.4 (Moore & Persaud 1996): 1, 2, 3, tactile corpuscles 4: pressure- and touch-sensitive hair follicle braiding 5: algesic free nerve endings 6: cold-sensitive corpuscles (terminal bulbs of Krause) 7: heat-sensitive corpuscles (Ruffini's corpuscles) 8: pressure-sensitive lamellar corpuscles (Vater-Pacini corpuscles)

The skin reacts very sensitive on all stimuli which hits its surface (Bevis 2001). Anatomical and physiological connections are indispensable in this case and are explained in the following chapter.

Goldstein (1997) describes the skin as the heaviest organ of the human body. It is not the largest (the surface of the intestinal tract or the pulmonary alveoli is even larger than the skins') but certainly the most noticeable. The histological structure of the skin (cutis, dermis) has an area of about two qm at the adult, weighs three kg and has a gauge between 1.5 and 4 mm depending on the region of the body (Fritsch 1994).

It consists of two morphological differing layers which derive from the material of two different blastodermic layers. It can approximately be divided into the epidermis and the dermis. Underneath there is the subcutaneous tissue (hypoderm), which is, more specifically seen, not a part of the skin (Moore & Persaud 1996).

The subcutaneous tissue consists of fat cells that act as thermal insulation, provision of nutrition and cushion and what is more, it contains a lot of blood vessels and nerves. There is a smooth transition from the dermis to the subcutaneous tissue; subsequent to the subcutaneous tissue are muscles, bones, cartilages or an organ. On this, our, surface the touch happens. This way, two surfaces contact each other and substitution happens. This is irreplaceable for us as human beings (Wagener 2000).

It belongs to the sensitive system and absorbs stimuli from the surface of the body and also from the inside of the body. It forwards these stimuli and converts them. Processes inside the sensitive system are only partially apperceived but happen more out of our consciousness. The absorption and transformation of stimuli on the sensitive system is carried out by means of specific receptors.

Every one of these receptors is responsive to a specific type of stimulus. There are exteroceptors and gut receptors, which divide into proprioceptors and visceroreceptors. That means the suitable receptors, that absorb and forward the stimuli, are provided for every system (Delank 1991).

(Further reading about the molecular regulation mechanisms of the skin see Haake & Lane, 1989, as well as Nanney et al., 1990)

The skin, with its sensory innervation, gains its functional capability as the first of all organs already within the embryonic formation. The sensorium of the mouth region lets the newborn find the breast of the mother and activates the sucking reflex. The postnatal exploration of the surrounding by using hand and mouth create the first impressions of the apperceptible ambience in our brain (Zimmermann 1995). According to Fruhstorfer (1996), numerous characteristics of objects are investigated not by hearing or seeing but by means of the senses of our skin. This is especially relevant for characteristics like weight, temperature, hardness, unevenness, humidity, viscousness and elasticity (Fruhstorfer 1996).

The skin is the outside edge of our body. On its surface a large percentage of the contact to the ambience and to other people happen. If we touch something actively, we normally do that by hand, since it is our most skilled part of the body. Examinations and theories in the range of perception psychology focus on visual and acoustic perception. However, some of these general findings are referable to perception of contact. This means processes of sensual perception can be divided into three aspects whereas the transitions can be smooth.

The sensory perception is ranked first. Stimuli, which are physical energy, are perceived from the suitable sensory organs and receptors and transformed into neural energy. The mechanical pressure that a hand puts on the skin of our arm causes an electric impulse of the of the nerve cells which are forwarded to the brain.

Thereby a first distinction according to simple features of the stimuli and a selection is made. The second process is the organisation whereas stimuli are classified and structured. This way an inner representation of the perception is emerged and the aim of this process is the formation of conciseness.

Some specific, significant characteristics of an object are emphasised like its outline of the togetherness to other objects. The intensity and diffusion of the pressure onto the skin is analysed concertedly. Heat and pressure, which the nerves of the subjacent muscle register, are perceived at the same time.

The third step is where classification and interpretation are carried out. Characteristics, meaning and function of the perceived objects are analysed and afterwards they are compared to the hitherto existing experiences and actual needs. We recognise the touch of a hand and comprehend this kind of touch as a gesture of friendship. It is a 'call for attention' and an address of welcome. Thereby information of other senses systems are assimilated (Wagener 2000).

Goldstein (1997) tries to point out that the perception, which the skin senses arbitrate, are definitely conducive to protect against injuries and stimulate sexual activity. So it becomes apparent that these perceptions are necessary for the survival (Goldstein 1997).

To grant this 'survival' the haptic-somatic system is necessary amongst others.

## **6.1. THE HAPTIC-SOMATIC SYSTEM**

Generally seen, the haptic-somatic system involves the function of perception of the skin and posture senses. The physiologist Irvin Korr (1979 & 1997) stresses that life not only consists of ventricular systole, glomerular filtration and the citric acid cycle but also of running, talking, sitting, eating, working, loving and fighting – life is motion of the muscle.

Every human being expresses by means of posture, movement, writing and talk what he or she is, what he or she feels or what he or she believes in. Personality, intellect, imagination, creativity, perception, love, compassion, values and worldview become manifest in muscle movement (Korr 1970 & 1997).

Muscle tissue is moving tissue according to Bevis (2001). Skeleton and musculature are the most massive and from the outside most visible parts of the body that we can notice. They have a profound symbolic meaning and move consistent with our already experienced life. Muscle tissue is the 'instrument of the soul'. Wittgenstein describes the human body as the best reflection of the human soul (Wittgenstein, 1974).

The way a human being moves says a lot about him- or herself and his or her personality but nothing about biochemistry. Consequently a direct connection between science, function of the muscle and emotional life becomes apparent (Bevis 2001).

On the basis of recurrent mention and meaning of the muscular function and the muscle tissue, this seems to play an important role within the haptic-somatic system. The muscles themselves are not a self-adjusting biochemical 'machinery' (Bevis 2001). Therefore they do not only function according to the basics of mechanics (Bevis 2001). According to Bevis muscle functions are in the first instance characteristics of human beings and not an inanimate chemical system as recently described.

From a physiological point of view the skeletal muscles take up the most amount of blood and energy of the body (Benninghoff 1994). The use of these resources is quite variable. According to Bevis, the muscle tissue at large is a very flexible, homeostatic reservoir. Whether body economy or other subsystems, muscles have a profound symbolic meaning. Irvin Korr (1970/1997) points out that here the human nature is expressed by means of movement.

Nevertheless, there is a biochemical aspect within musculature. Tiffany Field, psychologist from TRI 'Touch Research Institute' (institute for exploration and practice of touching) has concerned with this issue. Field (1988) could prove a so called 'biochemical frame' on the basis of lots of single studies. Contact with the body, for example by means of a massage, reduces the distribution of the stress hormone cortisol. At the same time the immune system and the vegetative vagus reaction is strengthened – heartbeat, respiration, blood pressure are stabilised. Hormones, which are released, solubilise the nutrition better and that can explain the weight gain. Especially the increased production of adrenaline and noradrenaline shows a maturation process, for instance within the lungs or the sympathetic nervous system, which controls very important life functions autonomically.

As we already know we receive, by means of our tactile system 'hand', stimuli on our skin respectively muscles. How are these information registered and transformed in a suitable way? Which kinds of perception can the skin show?

Therefore we need a subsystem so that the perception can be absorbed from the locomotor system.

### **6.1.1. PROPRIOCEPTORS**

#### (PERCEPTION FROM THE LOCOMOTOR SYSTEM)

According to Montagu (2004) the analogical muscle and joint receptors are stimulated by means of the cutaneous stimulation. The skin belongs to the class of organs which are called exteroceptors. It can receive impressions that influence the body from the outside.

Receptors, which respond to the stimuli from the inside of the body (perception), are called proprioceptors. They are also responsible for deep sensibility. A child notices the mood of the person who carries it by means of his or her muscle-joint-ligament-property (Montagu, 2004).

Thereby one has to distinguish between the sense of posture (correlating position of parts of the body), sense of movement (perception of movement) and sense of power (perception of the power necessary for movement). According to Wagener (2000), the proprioceptors play an important role in regard of the perception of ones' own body as well as in respect of the development of a body image or a body scheme. It conveys us our posture in the room and insofar it is pivotal for the relation to the outside world. The functionality of the separate proprioceptors is explained in the following part:

The position of a joint is detected by means of mechanoreceptors (receptors that are responsive to pressure) inside the joint capsule and inside the skin. Receptors inside the muscle spindle register in how far a muscle is demanded by means of their longitudinal and tension detectors. The equilibrium organ (vestibular organ) in the internal ear informs about the position of the body in the room, in relation to the gravitation.

For proprioception all available neural information are used and assimilated (Rauber & Kopsch 1987, Wagener 2000).

According to Fruhstorfer (1996) the proprioception plays an important role in regard of active touching and palpating. For example in respect of massage techniques, shiatsu or acupuncture. This means hands are responsible for perception from the locomotor system, in particular for deep sensibility (Wagener 2000). Furthermore, there is a proprietary perception of the skin's subsystem.

## **6.1.2. SOMATOSENSORY PERCEPTION**

### (PERCEPTION VIA SKIN)

Within different groups you have to distinguish between tactile sense (tactile perception), temperature sense and pain. These three senses are independently of each other. Many receptors have a sensitivity that is limited to only one kind of stimulus (adequate stimulus), others react sensible to different kinds of stimuli (polymodal receptors). Low-threshold and high-threshold receptors differ in their grade of sensitivity. High-threshold receptors, that only respond to injuring stimuli, are characterised as nociceptors (pain receptors). The intensity of the stimulus is not only conveyed by means of activity of a receptor but also depends on the amount of active receptors, since an intensive stimulus spreads out wider and activates a larger number of receptors (Wagener 2000). Inside the skin system are, next to the already mentioned receptors, 'specialised' subsystems with appropriate specific receptors, for example temperature perception.

## **6.1.3. TEMPERATURE SENSE**

### (TEMPERATURE PERCEPTION)

Temperature sensitivity is not evenly spread over the skin. Surrounded by quite insensitive areas, separated cold and warm points can be distinguished. The highest density of thermoreceptors can be found in the face. Changes of skin temperature are conveyed to the brain by means of those thermoreceptors. Next to apperception, the thermoreception also plays a role within regulation of the body temperature but this normally happens unnoticed (Wagener 2000).

'Warmth' and 'cold' are a matter important emotional meaning as feeling but as well as metaphorically used terms. People can be warm-hearted but also as cold as ice. People, who give us a feeling of security and reliability, convey emotional warmth (2000). Whereupon can this be traced back?

Certainly just conditionally to the temperature of our hands as tactile organ. Wagener (2000) adverts to other aspects that were already mentioned in chapter perception and communication.

From an emotional point of view warmth can become heat and also 'love fever', on the other hand cold seems to be lifeless, unemotional (frigid) and in certain circumstances also dangerous (Wagener 2000).

Schaefer et al (1962) assumed the essential element of 'touching' is the skin's change of temperature. Due to the results of animal experiments, they could prove this hypothesis. Rats, whose body temperature has been declined, showed the same dropping of ascorbic acid as rats, that have been touched. According to Montagu (2004), the touch of a cold hand is uncomfortable for us whereas the touch of a warm hand is convenient. This allows the conclusion that cutaneous perception is not only a matter of touch or pressure but also partly a response to warmth or cold (Montagu 2004).

Our skin as tactile organ has a excessive sensibility to absorb perceptions from our surrounding. On the basis of this sensibility it is also very algesic. There is also a specific 'detection system' for pain.

#### **6.1.4. PAIN PERCEPTION**

##### (NOCICEPTION)

The skin, as it is our protective cover, is very algesic. That helps us to notice injuries at an early stage and in this regard it is of vital importance. Pain receptors occur as often as all other receptors together on skin and this also shows their importance (Fruhstorfer 1996). The comparatively intensive algnesia is limited to the epidermis and the dermis whereas the subcutaneous adipose tissue is quite insensitive. Nociceptors response to imminent or already incurred injuries of the skin; they are not spontaneously active. Next to mechanical stimuli also intense thermal and chemical stimuli as well as results of injuries (inflammation) can evoke nociception.

After multiple damaging stimulation or when the tissue is inflamed, the sensitivity is increased (sensitisation). Then the receptors also respond to non-toxic stimuli and act spontaneously (Wagener 2000).

There are stimuli that are not noticed although they a damaging impact even if they are set for a long time. For example ultraviolet or nuclear radiation. All nociceptors adapt slowly with above threshold but not damaging stimulation so no conscious pain perception takes place. The activity of nociceptors does not completely explain the pain perception. Also thereby emotional and cognitive factors play an important role (Wagener 2000).

Also mechanoreception is a part of the already mentioned subsystem like thermoreceptors and nociceptors.

### **6.1.5. TACTION**

(MECHANORECEPTION)

Diverse stimuli and perceptions are conveyed by means of the taction. Slight, moving stimulation generates titillation which again has an intense effect of rouse. So titillation often initiates a defence movement if a tiny insect touches the skin (see Fruhstorfer 1996).

Perceptions of contact are also often initiated by means of slight, moving, mechanical stimulation and enables as active palpation the cognition of form and surface structure. For example the characteristics of an object. Mechanical vacillations lead to the perception of vibration, even compression leads to the perception of pressure and stretching leads to the perception of distension. The last two examples can lead to pain if the are increased (Wagener 2000).

The tactile sensitivity is of variable intensity in the different parts of the body. The pressure threshold (perception threshold for punctual stimuli by means of touching), the vibration threshold (perception threshold for stimuli by means of vibration) and the two-point thresholds (the shortest spatial or temporal distance between two punctual touchings that can just be distinguished from each other) are lowest in the area of the mouth as well as on the tip of the tongue and the fingertips. This ability is combined as discriminative tactile functions or tactile resolution. Precondition therefore is a high density of receptors (Wagener 2000). What does that mean?

Here the question arises if it might be possible that the hand of an osteopath, in regard if this high density of receptors, can feel/touch 'better' or 'more sensitive' than the one of a therapist with a lesser distinctive density of receptors?

As well as within other sensory organs, different receptors with the belonging nerve fibres that have a different structure and different functions can be distinguished within the skin. The parts of skin that are the most sensitive are the ones without body hair (Wagener 2000).

Intensity detectors, velocity detectors and acceleration detectors react subordinate to the frequency of the presented stimulus. Specific skin perceptions are conveyed by specific receptors and a heightened pulse frequency of a receptor means a more intense reaction, not a change in quality. That means sensors encode the different aspects of skin stimulation. What makes the frequency of a stimulus so important?

For Wagener (2000) it is hard to imagine how the quality of a stimulus can convey the characteristics of a touch by means of this structure. For example, which frequency has a kiss? What happens at this instant? Why are we able to distinguish between touches that are on one hand so similar, and on the other hand completely different?

If I stroke soft leather it feels different than the hood that has been warmed up by the sun, even if some people sense pleasure at both actions. A cobweb, into which one runs in the dark, differs from a gentle breeze that welcomes us at the balcony in the morning. But what tells this touches apart at the level of receptors?

On the level of receptors different qualities of the materials mentioned above evoke different forms of reaction which is mentally hard to feel out. Nevertheless, this is an everyday, 'easy' task for our brain (Wagener (2000)).

Tactile sensors do not only respond to 'new' stimuli. They always pursue what the body is doing, if it rests or is active, if skin, muscles, tendons or joints are strained, pressed, turned or stressed. Researchers like Martin Gruhnwald (2001) from the haptic laboratory in Leipzig hold the opinion that cooperating sense-references – our perception of the position of the body and the feedback about its movements together with tactile perception – have to be treated as unity as they serve each other, inform each other and partly also use the same receptors. Gruhnwald (2001) talks about an "agitated sense".

Mandayam Srinivasan from the 'Touch Lap' at the Massachusetts Institute of Technology (MIT) near Boston has dealt with the approximately 20.000 receptors of the tactile elevation 'fovea'. They are the points of most sensitive feeling. Srinivasan could prove that within 80 milliseconds a change of compression is registered within the tactile elevation and so the suitably adapt themselves. Srinivasan still could not demonstrate why they react so fast. According to him, the tactile sense, that a human being owns, cannot be 'switched off' or be deliberately suppressed.

'Wir können die Augen schließen, uns die Ohren zuhalten, die Nase verstopfen, der Zunge nichts zu schmecken geben. Immer aber müssen wir etwas spüren' [*We can close our eyes, keep our ears shut, choke up our nose, give the tongue nothing to taste but still we have to sense something*], so Srinivasan.

By a project at the MIT (Massachusetts Institute of Technology), Srinivasan deals with the question in how far the ability of our tactile sense can change our surrounding palpably. He and his team developed an 'abdominal simulator' and with this and by means of a sensorial computer program abdominal surgeons could train medical procedures. Additionally they found out that the brain of the surgeon contrived its own simulation. It suggests instinctive feeling – namely exactly at the same point where the tips of the instruments manipulate the virtual organ and the whole attention of the proband focuses every mircocut.

Because of this results they assumed that the tactile sense does not stop at the edge of the body, but also 'migrate' to objects and integrate them emotionally. Which hypothesis can be derived from this result?

For example that hands/fingers 'match' with the palpated organ in the abdominal cavity by means of 'emotional integration' with the aim to feel its movement?

But if a 'lifeless' object, as Srinivasan has noted, can be equipped with such a lot of emotion – how can someone distinguish between the own body and a foreign body? How can someone distinguish between the self and the not-self?

According to Matthew Botvinick (2007) from the University of Pittsburgh, we are able to do so because of experiences. He says: 'Wenn etwas unsere Hand berührt, erhalten wir mehrere Eindrücke. Wir sehen den Kontakt, außerdem fühlen wir ihn. Das Gehirn stellt zwischen beiden Perspektiven einen Zusammenhang her und identifiziert daraufhin das so Wahrgenommene als Teil unseres Körpers' [*If our hand touches something, we gain diverse impressions. We see and we also sense the contact. The brain connects those two perspectives and identifies the perception as a part of our body*]. The human being learns from that and develops its own experience by means of a central processing. A sensorial feeling has to become a perception. Subsequently it is 'sorted' into our experiences so that we can act 'appropriately' (Rauber & Kopsch 1987).

Now that we have examined the tactile sense and could state that it is able to perform complex functions, we move on to the question how stimuli are forwarded and by which means a processing takes place.



The skin - our taking cover

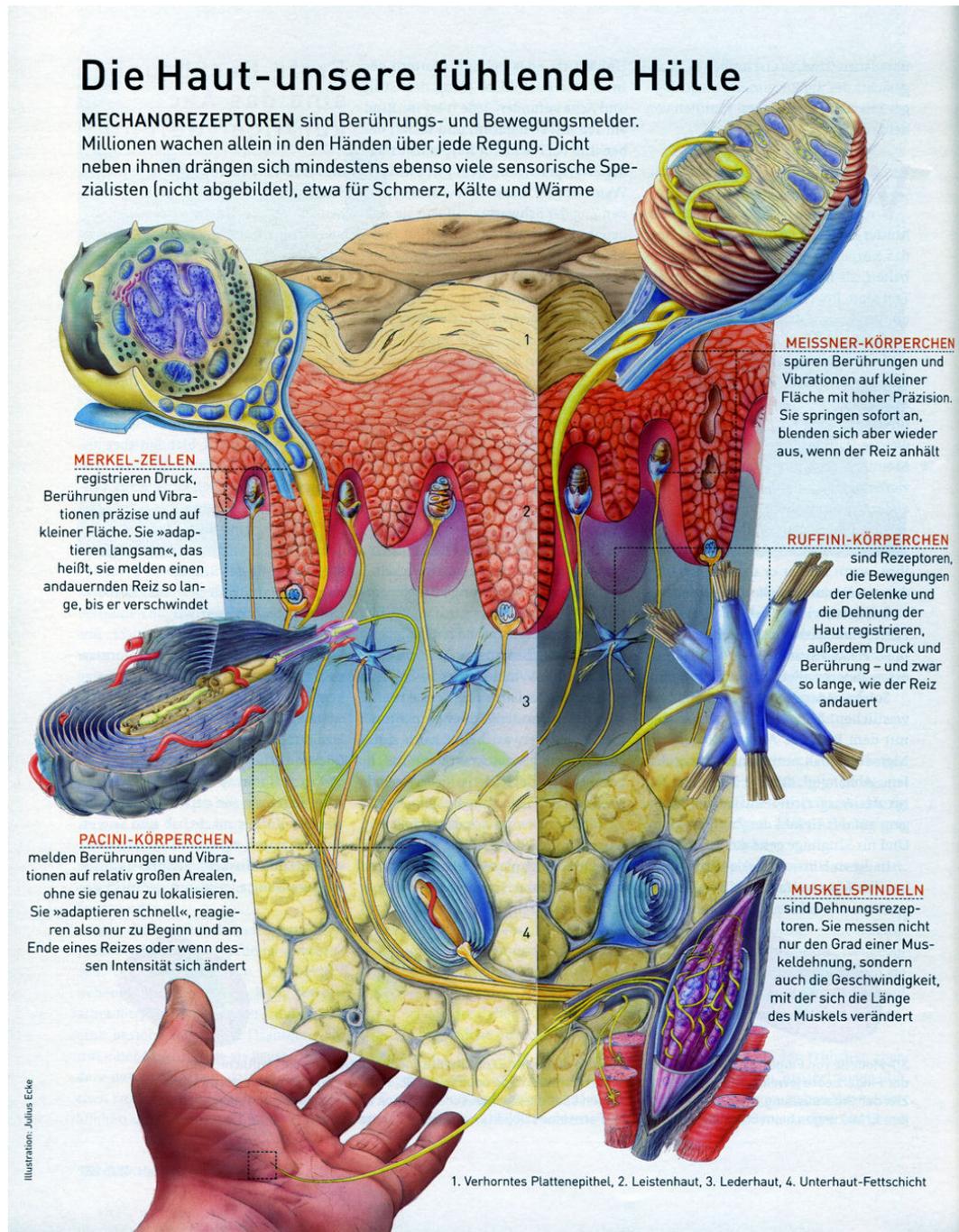


Fig.5 (GEO june 2004 - touch)

## **6.1.6. NERVOUS SYSTEM AND CENTRAL PROCESSING**

### **MECHANISMS**

The nervous system includes every stimulus-conductive and stimulus-processing parts of the body. This means not only nerves but also receptors belong to it. Various parts of the nervous system can be distinguished. On the one hand there is the central nervous system (CNS), consisting of spinal cord and brain. On the other hand there is the peripheral nervous system that includes every nerve of the body. This one can be divided into the somatic nervous system (control of the skeletal muscles) and the autonomic nervous system, which controls the organ functions and is abstracted from the deliberate control to a large extent. The brain can be divided into different structures that have different tasks (Benninghoff 1994, Rauber / Kopsch 1987).

The processing of appearing stimulus starts spinal cord as it is a part of the central nervous system. Under some circumstances reflexes are initiated before the sensorial perception has reached the brain. The medulla oblongata and the brain stem both belong to the brainstem. Basic life-sustaining activities like respiration, heart beat, sleep-wake rhythm are coordinated and controlled in this part (Benninghoff 1994, Rauber & Kopsch 1987).

The thalamus, which belongs to the diencephalons, is an important control centre for all kinds of sensorial stimulus. Here they are processed as well as forwarded. The thalamus plays an important role in regard of the emotional coloration of sense perceptions.

The cerebral cortex is considered as the place of consciousness and memory. Some regions could be differentiated in which the information of the sensory system is processed. The region for somatosensorial perception is mainly in the parietal lobe that can be located centrally at the vertex (Benninghoff 1994, Rauber & Kopsch 1987).

The cerebrum is divided into a left and a right hemisphere and they are connected by a bar (corpus callosum). A lot of sensorial (perception) and motor (movement) processes are contralateral, that means that hemisphere directs the opposite side of the body (Benninghoff 1994, Rauber & Kopsch 1987).

According to neuroscientist Graziano (2002) from the University of Princeton, neurones are able to create new 'firing samples' and in this manner change the image of the body in the cortex. For example, if you train your fingers by playing an instrument, the territory of the fingers (in the cortex) is enlarged. On the other side, if we do not use this ability, the brain 'reorganises' itself. That means we 'lose' the won territory of the fingers again.

Graziano (2002) was able to prove a significant flexibility of the body schemes of oneself. Body scheme means to assemble different sensorial signals inside the brain to a pattern. By means of a study he found out that optical as well as tactile neurones respond to a conceived object at the same time and they also integrate them accordingly into a body scheme on a cortical level inside the brain. They can distinguish between an 'artificial' and a 'real' object (the arm of an ape within this test). This leads to the conclusion that one cannot 'trick' neurones. According to Graziano, they are able to make the tools in the hands of a human being seem to be an elongation of the limbs towards the body scheme of the brain. Graziano calls this 'bond of action'. This means that, for example, a hammer is included in the model of the body.

The lifeless object becomes a sensing subject with the aim not to hit the thumb but the nail. So the difference between self and object, between feeling and unfeeling is lifted. Why?

The aim is to achieve more skills. Stefan Kennett and his colleagues (2003) from the University College London could prove that the results of feeling tests were more precise when the 'test person' could see that his or her arm has been touched.

Until now we have seen that neurones are 'switched' and to which features they are able if you stimulate them. In the following passage the forwarding of according information to the brain shall be considered.

### **6.1.7. FORWARDING**

A stimulus activates a receptor and this communicates an impulse to the appropriate nerve fibres, which are bundled together to numerous activated periphery nerve fibres. They arrive at different points of the spinal cord and from there on the information is forwarded by means of two paths to the brain (Benninghoff 1994, Rauber & Kopsch 1987). One system is called posterior funicle or as well medial lemniscus. The way it takes inside the spinal cord mainly forwards impulses.

Those impulses derive from perceptions of contact and proprioceptors (perception of the movement system). Via spinal cord and medulla oblongata the information is forwarded to the contralateral thalamus and are processed within the primary and secondary somatosensory cortex in the parietal lobe (area SI and SII of the parietal cortex) (Benninghoff 1994, Rauber & Kopsch 1987).

The second system is called anterolateral funiculus or spinothalamic tract. It is responsible for signals from temperature and pain perception and probably also for viscerosensitive perception (perception from the organs).

Via contralateral paths the information is forwarded to the brain stem and the thalamus. Thence it reaches diverse cortical areas of the brain but a clear projection to the cortex is missing. The information is mainly processed subcortically (Benninghoff 1994, Rauber & Kopsch 1987).

Altogether this sounds as if the different perceptions and systems were absolutely independent from each other but in fact they are not since there is numerous intercommunication. That way, impulses of low-threshold mechanoreceptors arrive at the anterolateral funiculus.

In fact, only a small amount of neurones connected to the anterolateral funiculus respond only to pain and temperature perception. Most of them are multireceptive and also linked to mechanoreceptors. How the information is filtered and separated inside the brain is still unexplained. The largest amount of information is indeed forwarded to the contralateral thalamus but some do not change the hemisphere but stay ipsilateral (Benninghoff 1994, Rauber & Kopsch 1987).

The neurones of different parts of the skin run towards the horn of the spinal cord into a certain sequence of the spinal cord. This leads to the fact that the skin of human beings – as the skin of all vertebrates – is segmentally innervated according to the number of vertebral bodies. This means that the nerves of a specific vertebral body is connected to a certain part of the skin. This area of the skin is called dermatome. An essential principle within this is the overlapping of dermatomes and so nerves of different vertebral bodies provide for a certain area of the skin. The damage or destruction of a dorsal root of spinal nerves does not lead to a total loss of sensitivity of the analogous area of the skin but leads only to a decline of sensitivity. The convergency of receptors the skin is very interesting as well as the fact that different organs converge to the same neurones and in this way it can come to so called transferred pain. For example if there is not enough supply with blood for the heart this can be perceived at the skin surface (Benninghoff 1994, Rauber & Kopsch 1987).

We can notice that a forwarding through several ‘tracts’ in the spinal cord takes place. On the one hand this is divided specifically, on the other hand there is intercommunication. Inside the brain, central processing takes place within different areas. This shall be considered in the following passage.

#### **6.1.8. PROCEEDING**

The proceeding of signals already starts in the spinal cord and the brain stem. In the spinal cord somatovisceral information is pre-processed and forwarded into different tracts. In some circumstances a impulse to motor neurones (efference) is following immediately and a reflex is initiated.

Inside the brain stem there is close interweavement of the autonomic, motor and somatovisceral system. You talk about an 'unspecific system' as the exact functionality and localisation is just partly known. It is opposed to the specific system of sensory function (here posterior funicle). The unspecific system influences autonomic and emotional reactions as for example the reaction of waking, the EEG<sup>1</sup> and the sleep-wake rhythm (Benninghoff 1994, Rauber & Kopsch 1987, Wagener 2000).

<sup>1</sup>[EEG = short form for electroencephalogram. It measures the electric energy the brain is producing constantly and spontaneously. Those brain waves are not always the same and depends on the person whether he or she is awake and attentive or asleep and dreaming].

The information of the various systems is forwarded to the thalamus. Inside the different thalamus cores it is processed and forwarded, partly to the primary and secondary somatosensory cortex, partly to other areas of the cortex or subcortical structures. Some thalamus cores are somatotopical organised, that means they correlate to the disposition in the body, but other thalamus cores are not organised in this manner (Benninghoff 1994, Rauber & Kopsch 1987, Wagener 2000).

Forwarded stimuli reach the cortex after they have been pre-processed. In the primary somatosensory cortex (SI) the representation is topographically. That means the physical configuration in the cortex reflects the physical configuration of the body (somatotopy). Here the contralateral body hemisphere is depicted completely and coherently.

Thereby the area of the mouth is an exception since it is represented completely (Fruhstorfer 1996). Multiple projection is true for the hand as it is plurally depicted in the cortex (Benninghoff 1994, Rauber & Kopsch 1987, Wagener 2000). This arouses the question what meaning this 'multiple depiction' has?

In regard of this question no information was given in literature. According to Zimmermann (1995) different projections mean different tasks.

We can state that proceeding already starts inside the spinal cord and the brain stem before it is forwarded to the centre. Interweavement between the single systems are found inside the brain stem. It is also noticed that there is an identical depiction of the body inside the brain.

### **6.1.9. SUMMARY OF THE CORE POINTS**

The aim of this chapter was to show how that hands and the skin as tactile organs are anatomically structured. It was also possible to detect physiological functionality by means of some passages. Thereby a segregation of the specific systems take place on the one hand. On the other hand those systems can only be considered holistically since the body has to be regarded as a unit. Pawluk (1997) calls it a holistic model. A list of the core points follows:

- the skin, as a tactile organ, integrates various systems and so called subsystems for perception, proceeding and forwarding of stimuli
- proprioception, that means perception from the movement system, plays an important role within active touching and feeling (Fruhstorfer 1996). What is more, it is responsible for deep sensibility (Wagener 2000)
- a 'biochemical frame' of the skin could be proved on the basis of contact. This reflects in a declined distribution of the stress hormone cortisol and so the immune system and the vegetative vagus reaction are strengthened.
- the whole muscle tissue is a very flexible homeostatic reservoir and has a profound symbolic meaning.
- there is no clear separation between the various perceptions and systems. The proceeding starts inside the spinal cord and the brain stem and here is already interweavement between the single systems. Inside the brain is an identical depiction of the body.
- the forwarding of nervous stimuli happens via activated receptors.
- Neurones, thus the sensibility and dexterity, can be stimulated by means of regular training such as playing an instrument. If one stops practising, the brain 'reorganises' itself. This means we 'lose' the won territory in the cortex.

- the nervous system includes all stimulus-conductive and stimulus-processing parts of the body. This way the human being learns and develops his or her own experience via the central proceeding.
- the tactile sense does not stop at the edge of our body but can migrate to 'objects' and integrate them emotionally.
- specific skin perceptions are conveyed via specific receptors. At the fingertips a high density of tactile receptors exists but that vacillates individually.
- various stimuli and perceptions are conveyed via the tactile sense. The activity of nociceptors does not explain pain reception completely. Emotional and cognitive factors also play an important role.
- the skin, as our protective cover, is very algesic and this helps to register damage at an early stage and thus is essential. Nociceptors occur as often as every other kind of receptors of the skin together.
- next to their physiological meaning, stimuli also have an emotional/metaphorical relevance.

All previous summaries and core points shall be expanded into the following discussion and shall be considered in the context of an osteopathic treatment.

## 7. DISCUSSION

Since the thesis offered an approach to Touch – Perception – Communication for the reader, the following chapter discusses the questions which were asked and answered in the course of the actual chapter and in the abstracts; this means consolidated and considered within the osteopathic context. How does a “successful” personality perception work, i.e. how can a “successful” perception be carried out?

Forgas (1999) stressed the „perception“ in the process of interaction between patients and therapists, in order to be able to understand the patient. This leads to the interpretation of the perceived. Starting with a handshake (tactile, ritual touch), the appearance, the apparition, the communication of a being greeted etc., we are getting a lot of information. Typical “characteristics” of the patients can be observed during conversation or anamnesis. Independent from the reason for his consultation the patient transmits his attitude toward his “problems”, this personal traits like friendliness, egoism, introvertedness, extrovertedness, etc. and thus his characteristics (Forgas 1999).

We establish a possible foundation of trust for our osteopathic treatment and gain, previous to the actual anamnesis, many statements which the patient transmits unconsciously or else via his body language. Nevertheless, Forgas (1999) says, we must never lose sight of our own impartiality such as preconceived opinions about certain types of people or false ties between individual personal characteristics.

A „contortion“ of the „objective“ personality perception could be the consequence, Forgas continues.

This could possibly lead to a misjudgement in the goal setting for an osteopathic treatment and thus endanger the success of the therapy. Nevertheless, says Forgas, there is no scale for the “acuteness of perception” for the judgement and assessment of the patient. Cronbach (1955) sees combination and connections of so-called capacities in the judgment and assessment of a patient.

Dehn – Hindenberg (2007) list among these psychosocial and communicative competences of the therapist such as professional therapeutic content, the ability to adapt explanations and information to the patient's required needs. Dehn – Hindenberg could further prove in their work, that professional competence alone and effective methods are not enough to work "successfully" with patients. Ommen et al (2006) call this "consideration of the emotional needs of patients" during the process of treatment an essential contribution of a trusting relationship between patient and therapist.

It becomes evident that before the start of a therapeutic, tactile „intervention“, the psychosocial and communicative capacity, meaning the interaction, forms a trusting basis, starting with the salutation, i.e. in the form of a handshake with subsequent anamnesis. Therefore, hardly anything stands in the way of a subsequent tactile intervention with the patient. Thus it is quite important for an osteopath to gain "exact" knowledge of the patient, i.e. his personality. From practical work we know, that there can be a vast difference between this "said", "seen" or "felt". Recognizing and perceiving emotions, characteristics and needs of a patient are important for an appropriate treatment (Forgas 1999).

It supports or rather influences thus the therapeutic success of an osteopathic treatment and leads to a personality perception. As a consequence from this touch, the patient can open up to the therapist and gain trust. The personality perception is joined by the influence and the meaning of communication/ interaction between therapist and patient.

This can be seen as an ongoing process in two directions (Forgas 1999). It means that the participants are sending out messages and pay attention to the signals of their counterpart (cf. personality perception). Dorsch (1994) regards communication as an everyday activity and even tactile touch is communication for him, but nonverbal communication. Here we encounter again different aspects of the already described personality perception.

The nonverbal communication is according to Forgas (1999) an interpersonal communication, consisting only in minor parts of verbal messages. Commonly, we transmit a variety of nonverbal signals, together with words and sentences, which emphasize the verbal message. They can modify or substitute the latter.

Comprisingly, Schulz von Thun (1981) writes that every communication is a whole package of messages. This is what makes the process of human communication so complicated and accident-prone. He emphasizes further, that the “actual” main message is often implicit, i.e. transmitted nonverbally (Schulz von Thun, 1981). In the context of an osteopathic treatment this can mean, that patients suffering from chronic complaints, often accompanied by psychosomatics, often react very sensitively to therapists and nonverbal language and establish as well a positive as a negative basis for a therapeutic intervention. This means that via our perception and attention we transmit either trust or distrust. The patient feels understood, he trusts us and opens up. This means it is a form of communication. If the therapist conducts a therapeutic, haptic touch on the patient, Neuhäuser – Metternich (1994) call it “Contact with others”. Touch – Perception – Communication correlate, influence and determine each other.

Contact can be of a different kind and influences communication, for example shaking hands, embracing or touching an according body-part of the patient. Most gestures of salutation or departure have to do with contact (Wagener, 2000).

Bevis (2001) sees tactile (haptic) contact as a unique instrument of communication, which differs essentially from verbal language. Contact can transmit emotions and messages which words cannot express. Contact can transmit a variety of information – entire “Berührungseinheiten”, as Bevis calls it. They are not communicated verbally, but can transmit the attitude of the therapist during anamnesis, e.g. via touching the arm or the shoulder. Investigation such as Montagu’s et al (2004) showed that touching helps the patient to open up (cf. personality perception).

A light touch on the shoulder of an emotionally charged patient while asking him questions can make him cry, because in the subconsciousness a feeling of psychological security awakes through tactile contact. The example emphasizes to what extent the tactile contact stands in the context of an osteopathic treatment.

Therapists have a „moral duty“, to build up a „psychologically safe environment“. This supports the construction of a trusting relationship between patient and therapist and thus represents the basis of a therapeutic intervention. Nevertheless we have to consider, that the antipathy between two people manifests itself firstly in the body language before it is transmitted verbally. Bevis (2001) emphasizes this with his insights that a contradiction between verbal and nonverbal patterns of communication causes confusing messages. Thus a trusting relationship between therapist and patient is not possible.

Attitude and emotions of the patient tend to be transmitted more effectively nonverbally than verbally. This can mean, that the nonverbal and verbal communication can differ to an extent, that the therapist has to decide for one „system“ in which he will take care of the patient. The question is whether one of the two contradictory messages influences the „observer“, meaning the therapist, more?

As we know according to Schulz von Thun (1981), nonverbal messages are transmitted primarily. This is emphasized by Henley's (1988) statement, that nonverbal communication is the scale on which words and intentions are measured. The statement by Argyle et al (1970) and Argyle, Alkema & Gilmour (1971) who say that nonverbal messages have a more convincing effect, makes the decision concerning nonverbal communication easier.

Putting the sincere touch in the context of an osteopathic treatment, it can be considered vital. Bevis (2001) underlines this with his statement, that the „sincere touch“ contains as well aspects of the nonverbal communication just as the element of the tactile touch; good preconditions for achieving a successful therapeutic intervention. It also shows, that touch arises in a context of communication.

The clinical, also called procedural touch, is of a technical nature. It is based on the mechanical-physical theory (Bevis 2001); for example through the pure manipulation by the therapist. They have a strictly technical and impersonal character. They can appear in different techniques of process, such as soft-tissue-technique, articulation technique, muscle-energy-technique, cranio-sacral-techniques etc. The usage of a procedural touch is carried out in a “technological” context, but nevertheless can be respectful and considerate (Bevis 2001).

Boyling and Palastanga (1994) and Zusmann (1994) come to the conclusion that unfortunately medicine has to recognize that „no treatment is more effectful than the other – no treatment more successful than the natural course of disease or the placebo-effect”. But this would mean that neither a sincere nor a procedural touch in the context of an osteopathic treatment comes into effect or plays a role. Everyday practice seems to be different.

Putting the sincere touch in the context of the procedural touch, we can see that the main difference lies in the way of convergence. The “technical” character takes centerstage in contrast to the emotional aspect of the sincere touch. Touching a human being consciously means getting involved with nonverbal communication “skin to skin” (Davis 1994, Montagu 2004); be it a sincere or a procedural touch.

The boundaries from the procedural touch via the sincere touch to the sexual touch is fluid and we therapists must never lose sight of that. We can experience it daily in our offices when we perceive patients, touch them, palpate them and communicate with them. Hollender & colleagues (1969) achieved in their study the result that the need to being taken into the arms and being stroked, are different for every person at every time, just as any other need. Thus we therapists would be potentially perpetually “in danger”, to fall victim to such an assault, because we don’t know which intentions patients have in the moment of therapeutic touch. According to the statements of Lowen (1969), therapists are not “endangered” of getting the reputation of a sexual touch, because contrary to the study of Hollender & Colleagues he could point out, that the sexual interests cannot be compared with the need of being touched. It serves only for the satisfaction of the need for an human being (Lowen 1969).

Having respect and attentiveness for the patient, in order to keep clear boundaries, recognizable for the patients, is important. Thereby therapists have to transmit to the patients not to be seen as superiors, because otherwise we are “in danger” of constructing a “power relationship” between patient and therapist. Additionally to “prohibition of touch” is necessary to consider the “requirements (conventions) of touch” (Wagener 2000). Montagu (2004) examined tactile contact with people very closely.

Thereby skin-contact and “manipulation” of the breast are psychologically very important for the baby (Montagu 1974). Many studies show, that psychological and physical closeness in the shape of tactile touch are of vital importance for the bodily and mental well-being of the baby and the need for tactile stimulation is part of the fundamental needs (Montagu 1974). A lack of skin-contact affects the sexual development in the process of growing up. Touch is, as mentioned previously, “perception”, that means “perception” takes place via the according stimulus of the receptors of the skin.

The hands serve as tactile organs because of their variety of characteristics and individuality. They can be seen holistically. On the one hand they perceive very light touches, which can trigger reactions and feelings (Wagener 2000). Touch is seen as a holistic model, because neurophysiological aspects play a role as well as psychophysical ones. Böhme (1999) and Zwisler (1998) observed that in sharp cold the haptic system gets quite insensitive and consequently precise manipulations become very difficult. Furthermore they found out that the interaction between a hand and an object leads to distortions, change of temperatures and oscillation on the surface of the skin. Different informations are gained within 200 milliseconds by the receptors (Böhme 1999, Zwisler 1998).

Seen in an osteopathic context, this emphasises the procedure of the “light” touch in order to perceive something. A hand is a very complicatedly constructed tactile organ. At the same time, this brings an unbelievable variety of possibilities to gain an effect on the patient. Touch – Perception – Communication stand in the context of an osteopathic treatment.

Via pressure points on certain spots of the skin perception of pressure is transmitted. For the delicacy of the tactile sense a high density of receptors on the fingertips is necessary. Thereby the spot of a touch can be specified exactly. Already 200 milliseconds after establishing contact with an “object”, information is available. The tactile sensitiveness is of a different distinction in the different regions of the human body. This leads to the question whether is possible that because of this high density of receptors the hand of an osteopath can feel/ palpate better or more sensitive than a therapist with a low density of receptors.

Investigations at the Massachusetts Institute of Technology (MIT) near Boston showed 20.000 receptors on the terminal tactile elevations of the fingers. These are the points of most delicate feeling. It could be proved that changes of pressure on the fingertips could be realized within 80 milliseconds and they adjust accordingly to the “object”. MIT could not yet prove why they react so quickly. Nevertheless we can guess of which degree of sensibility a therapist is capable. This leads to the question, how far the capacity of our tactile sense is capable to changing our environment manually. According to a project at the MIT (Massachusetts Institute of Technology) it could be proved, that the brain of the “operator” at a “abdominal simulator” causes a specific simulation. It suggests the feeling/sense of the terminal tactile elevations of the fingers – at exactly that point, where the tips of the instrument manipulate the virtual organ and the attention of the test person monitors every micro-cut. They deduced that our tactile sense does not stop at the surface of our body, it can merge into objects and integrate them emotionally. What can be deduced from this and which hypothesis can be constructed?

The hands of a therapist adjust for example to the palpated organs in the abdominal region because of the „emotional integration“. This with the aim to feel their movements.

Thereby it is evident, that therapists touch their patients in very different ways. These differences are determined by the personality perception and by the intellectual understanding, how changes can happen in the body of the patient based on philosophical, mechanical and physiological principles.

From the individual expressive behaviour and the according convictions of the therapist. In literature we find only a few psychological theories which explain the results of a manipulation on the body. The expressive touch, depending on the according character of the “practitioner” is hardly mentioned either.

Osteopaths do not agree on which importance philosophy, physiology, mechanics and psychology should occupy in an osteopathic treatment. Which action are actually “osteopathic” and which ones should be assigned to another discipline?



Fig. 6: „*the touch*“ TOUCH – PERCEPTION – COMMUNICATION  
Hands: margit kettelhack and kerstin schuster

I think touch is a method of healing, which is not sufficiently used in our culture and tradition of health. A method is ignored, which would have less side-effects than many pharmaceutical products, if it is applied with sufficient reflection and respectful application.

„In the beginning there was the Word“, says the Gospel (John, 1.1). But the question is justified, if it isn't touch that was at the beginning. Touch is the first sense we develop as embryos and it is still working when seeing and hearing have already deteriorated in old age.

## 8. BIBLIOGRAPHY

### 8.1. REFERENCES

- (1) Anzieu, D.: Das Haut – Ich, Frankfurt, Suhrkamp, 1991
- (2) Allport, G. W.: Social Psychology. Cambridge, Mass.: Riverside Press, 1924./: Hoghton – Mifflin, 1924
- (3) Alkema, F, Argyl, M, Gilmour, R.: The communication of friendly and hostile attitudes by verbal and nonverbal signals. European Journal of Soial Psychology, 1971
- (4) Bach-y-Rita, P., Tyler, M.E., Kaczmarek, K.A.: Sehen mit dem Gehirn. Internationale Zeitschrift für Mensch und Computer Interaktion, 2003
- (5) Benninghoff, A.: Anatomie, Makroskopische Anatomie, Embryologie und Histologie des Menschen, Band 1, 15.Auflage, Uran & Schwarzenberg, München-Wien-Baltimore. 1994
- (6) Bevis, N.: Berührung und Gefühl in der manuellen Therapie. Verlag Hans Huber; 2001
- (7) Boadella, D.: Schock, Grenzen, Sprache und Körper. In: Hoffmann-Axthelm, D.; Schock und Berührung. SGBAT Körper und Seele Band 4. Verlag Schwabe,S.20 – 21, 1996
- (8) Böhme, D, Masoud Sotoodeh: Eine Einführung in die Haptik, Universität Bremen. 1999
- (9) Böhme, G.: Weltweisheit, Lebensform, Wissenschaft. Eine Einführung in die Philosophie. Frankfurt am Main: Suhrkamp Verlag, S.135; 1994
- (10) Botvinick, M.: Multilevel Struktur im Verhalten und im Gehirn: ein Modell der computergestützten Fuster Hierarchie. Philosophical Transactions of the Royal Society, Series B: Biological Sciences, 362, 2007
- (11) Bowlby, J.: Bindung: eine Analyse der Mutter - Kind – Beziehung. München: Kindler Verlag, 1975
- (12) Boyling, J.D., Palastanga, N. (Hrsg): Grive’s modern manual therapy. Churchill Livingstone, Edinburgh. 1994
- (13) Burton, A., Heller, L.G.: The touching of the body, Psychoanalytical Review 51: S.122 – 134, 1964

- (14) Chaitow, L.: Geleitwort aus Berührung und Gefühl in der manuellen Therapie von Bevis, Nathan. Verlag Hans Huber, 2001
- (15) Clark, M., Milberg, S., Erber, R.: Effects of arousal on judgments of others emotions. *Journal of Personality and Social Psychology*, 1984
- (16) Cline, V. B., Richard, J. M. Jr.: Accuracy of interpersonal perception a general trait? *Journal of Abnormal and Social Psychology*, 1960
- (17) Cronbach, L. J.: Process affecting scores on „understanding others“ and „assumed similarity“. *Psychological Bulletin*, 1955
- (18) Davis, P. K.: Die Kraft der Berührung. Ritterhude: Waldthausen Verlag; 1994
- (19) Dehn – Hindenberg, A.: Patientenbedürfnisse in der Physiotherapie, Ergotherapie und Logopädie. Aus: *pt – Zeitschrift für Physiotherapeuten* 07/2007. Schulz – Kirchner. 2007
- (20) Delank H.-W.: Neurologie. 6. Auflage. Ferdinand Enke Verlag Stuttgart. 1991
- (21) Dorsch, F.: Psychologisches Wörterbuch. 12. Auflage, Bern: Verlag Hans Huber, 1994
- (22) Duden „Etymologie“: Herkunftswörterbuch der deutschen Sprache.
- (23) Fachzeitschrift PNAS, DOI:10.1073 / pnas. 0404884101.
- (24) Fachzeitschrift Psychologie heute 06/2001, S.70
- (25) Field, Tiffany M. et al (Eds): Stress and coping across Development, Lawrence Erlbaum Associates, Hilldale-London, 1988
- (26) Frank, J.: Die Heiler: Wirkungsweisen psychotherapeutischer Beeinflussung, vom Schamanismus bis zu den modernen Therapien. Stuttgart: Klett – Cotta, 1981
- (27) Fisher, J. D., Rytting, M., Heslin, R.: Hands touching hands: affective and evaluative effects of an interpersonal touch. *Sociometry*, 1976
- (28) Forgas, J. P.: Soziale Interaktion und Kommunikation. Eine Einführung in die Sozialpsychologie, 4.Auflage, Beltz Psychology Verlags Union, 1999
- (29) Frank, L.: Tactile Communication, *Genetic Psychology Monographs* 56: 211 – 251, 1957
- (30) Freud, A.: Wege und Irrwege in der Kinderentwicklung, Bern und Stuttgart (Huber und Klett), S.179 ff., 1968.

- (31) Freud, S.: Was sind Übertragungen? I: Imaginative Psychotherapie. 1905
- (32) Freud, S.: Zur Dynamik der Übertragung. In: Zur Dynamik der Übertragung. Behandlungstechnische Schriften. 2. Aufl. 2000. Frankfurt am Main. Fischer Taschenbuch Verlag. (siehe auch Freud GW, S.364-374). 1912
- (33) Fritsch, P.: Die Haut. In: Benninghoff S.793-811, 1994
- (34) Fruhstorfer, H.: Somatoviszzerale Sensibilität. In: Klinke & Silbernagel (Hg.) 1996
- (35) Gegenfurtner, Karl R.: Gehirn & Wahrnehmung, Frankfurt a.M.; Fischer Taschenbuchverlag (2.Auflage 2004). 2003
- (36) Gibson, J.J.: The Ecological Approach to Visual Perception. Dt.: Wahrnehmung und Umwelt, Urban & Schwarzenberg, München, 1982
- (37) Gibson, J.J.: The Senses Considered as Perceptual Systems. Dt.: Die Sinne und der Prozess der Wahrnehmung, Hans Huber, Bern. 1973
- (38) Goldstein, B. : Wahrnehmungspsychologie: eine Einführung. Heidelberg: Spektrum, Akademischer Verlag. 1997
- (39) Goldstein, B.: Wahrnehmungspsychologie, Heidelberg, Spektrum Akademischer Verlag, 2002
- (40) Graziano, M.: "Coding of visual space by premotor neurons" von Graziano, M.S.A., Yap, G.S. und Gross, C.G. Science (Band 266, auf den Seiten 1054-1057). 1994.
- (41) Graziano, MSA & Botvinick, M.M.: Wie das Gehirn den Körper repräsentiert. Erkenntnisse aus der Neurophysiologie und Psychologie. In: Gemeinsame Mechanismen in Wahrnehmung und Aktion: Oxford University Press, 2002
- (42) Greenwald, H.: The call girl. Ballantine, New York, 1958
- (43) Gruhnwald, M., Beyer, L. (Hrsg.): Grundlagen und Anwendungen zur haptischen Wahrnehmung, Birkhäuser Verlag, Basel, Boston, Berlin, 2001
- (44) Hajian, A. Z., Howe, R. D.: Identification of the Mechanical Impedance at the Human Finger Tip. ASME Journal of Biomechanical Engineering , 1997

- (45) Handy, C.L.: The ethiology and diagnosis of cranial lesions. J.Osteopath. Cranial Assoc., S.53, 1949
- (46) Heller, L.G.: The touching of the body, Psychoanalytical Review 51: S.122 – 134, 1964
- (47) Harlow, H. F., Zimmermann, R.R: Affectional responses in the infant monkey. Science 130 (3373): S.421 – 432, 1959
- (48) Harlow, H.F.: The Nature of Love. American Psychologist, 13, 673 – 85, 1958
- (49) Henley, N.M.: Körperstrategien. Geschlecht, Macht und nonverbale Kommunikation. Frankfurt am Main: Fischer Taschenbuch Verlag, 1988.
- (50) Heslin, R, Boss, D.: Nonverbal intimacy in airport arrival and departure. Personality and Social Psychology Bulletin, 1980
- (51) Hoffmann – Axthelm, D : Schock und Berührung. Oldenburg, Transform - Verlag. 1994
- (52) Hollender, M.H., Luborsky, L., Scaramella, T.J.: Body Contact and Sexual Excitement. Archives of General Psychiatry, Bd.20, 1969
- (53) Hollender, M.H.: The Wish To Be Held, Archives of General Psychiatry, Bd.22, 1970
- (54) Izard, C, E.: The Face of Emotion. New York: Appleton-Century-Crofts 1971
- (55) Jourard, S.M: An exploratory study of body accessibility. British Journal of Social and Clinical Psychology 5, S. 221 – 231, 1966.
- (56) Kahle, W., Leonhardt, H., Platzner, W.: Taschenatlas der Anatomie für Studium und Praxis, Band 3, Thieme Verlag, 6.Auflage 1991
- (57) Kemper, W.: Gegenübertragungskomplikationen. In: Imaginative Psychotherapie. (JZ??)
- (58) Kennett, S., Haggard, P., Taylor - Clarke, M.. Taktile Wahrnehmung, kortikalen Repräsentation und der körperlichen Selbst. *Current Biology* 13. 2003.
- (59) Klaus, M.H. Kennell, J.H. Maternal infant bonding. Mosby. St.Louis, 1976

- (60) Kopsch: Anatomie des Menschen. Lehrbuch und Atlas Band III, Nervensystem, Sinnesorgane. Hrsg. Leonhardt et al. Thieme Verlag. 1987
- (61) Korr, I.K.: An explication of osteopathic principles. In: Ward, R.C. (Hrsg.): Foundations for osteopathic medicine. American Osteopathic Association / Williams & Wilkins, Baltimore. 1997
- (62) Korr, I.K.: The sympathetic nervous system as mediator between the somatic and Supportive processes. Post Graduate Institute of Osteopathic Medicine and Surgery, New York. 1970
- (63) Krens, I.: Ehrengerichtsordnung der Gesellschaft für Tiefenpsychologische Körpertherapie aus der Intern. Akademie für Körpertherapie
- (64) Landis, C.: Studies of emotional reactions 2. General behaviour and facial expression. Journal of Comparative Psychology, 1924
- (65) Lederman, S.J. & Klatzky, R., Wolfe, J., Levi, D., Kluender, K., Bartoshuk, L., Herz, R.: Gefühl und der Wahrnehmung (Erste Ausgabe). Sunderland, MA: Sinauer Associates, Inc., 2005
- (66) Liem, T.: Kraniosakrale Osteopathie. Ein praktisches Lehrbuch. Stuttgart. Hippokrates Verlag. 1998
- (67) Liem, T.: Palpation – die Kunst des Fühlens. In: Morphodynamik in der Osteopathie. Grundlagen und Anwendungen am Beispiel der kranialen Sphäre. Stuttgart. Hippokrates Verlag. 2006
- (68) Little, M.: Zitate zur Gegenübertragung. In: Imaginative Psychotherapie. Eichberger G.2001. Theorie I. Kursskriptum. 1951
- (69) Loomis, J. & Lederman, M.: Tactual Wahrnehmung. In Boff, K., Kaufman, L., & Thomas, J. (Eds.), Handbook of Perception and Human Performance, 1986
- (70) Lowen, A.: Bio-Energetik, Therapie der Seele durch Arbeit mit dem Körper. 1985
- (71) Lowen, A.: The Betrayal of the Body, New York (Collier Books), 1969.
- (72) Lowenfeld, V: Creative and Mental Growth, New York (Macmillan), 1947
- (73) Lown, B.: Die verlorene Kunst des Heilens. Anleitung zum Umdenken. Suhrkamp Taschenbuchverlag. S.45 – 50. Stuttgart. 2004

- (74) Maletzke, G.: Kommunikationswissenschaft im Überblick: Grundlagen, Probleme, Perspektiven: - Opladen. S. 36 ff. Wiesbaden. Westdeutscher Verlag. 1998
- (75) Meggle, G.: Grundbegriffe der Kommunikation (2.Auflage). Berlin / New York, 1997
- (76) Montagu, A.: Körperkontakt. Die Bedeutung der Haut für die Entwicklung des Menschen, Klett Cotta, Stuttgart, 1988.
- (77) Montagu, A.: Touching: the human significance of the skin. Harper & Row, New York, 1986
- (78) Moore K.L., Persaud T.V.N.: Embryologie, Lehrbuch und Atlas der Entwicklungsgeschichte des Menschen. Schattauer Verlagsgesellschaft Stuttgart. 1996
- (79) Moser, T.: Gefühle, von denen die Seele nichts weiß. Interview mit Tillmann Moser. In: Psychologie Heute, 4 / 90, S.40 – 47, 1990
- (80) Moser, T.: Stundenbuch. Protokolle aus der Körperpsychotherapie. Frankfurt / Main: Suhrkamp Verlag, 1992a
- (81) Moser, T.: Vorsicht Berührung. Über Sexualisierung, Spaltung, NS-Erbe und Stasi-Angst. Frankfurt / Main: Suhrkamp Verlag, 1992b
- (82) Moser, T.: Körpertherapeutische Phantasien, Psychoanalytische Fallgeschichten neu betrachtet. Frankfurt / Main: Suhrkamp Verlag, 1989
- (83) Nelson, D.: Die Kraft der Heilsamen Berührung. Alte Menschen, Kranke und Sterbende liebevoll umsorgen. München: Kösel Verlag; 1996
- (84) Neuhäuser – Metternich, S.: Kommunikation im Berufsalltag. Verstehen und Verstanden werden. München: Verlag C. H. Beck, dtv: 1994
- (85) Ortega, J. und Gasset, Y.: nach Wilke und Leuner, S.214, 1990
- (86) Pawluk, D., Howe, R.: A Holistic Model Of Human Touch (Zusammenfassung Paper), Vortrag auf der Fifth Annual Computational Neuroscience Meeting, Boston, MA, USA 1996.
- (87) Rauber A.:Kopsch: Anatomie des Menschen . Lehrbuch und Atlas Band III, Nervensystem, Sinnesorgane. Hrsg. Leonhardt et all. Thieme Verlag. 1987

- (88) Rauber A.:Kopsch: Anatomie des Menschen . Lehrbuch und Atlas. Band I, Bewegungsapparat. Hrsg. Leonhardt et all. Thieme Verlag. 1987
- (89) Rohmann, U. H. und Elbing, U.: Festhaltetherapie und Körpertherapie. Dortmund: Verlag modernes lernen; 1990
- (90) Sandler: Sichtweisen der Gegenübertragung. In: Imaginative Psychotherapie. Theorie I. Eichberger G. 2001. Kursskriptum. 1973
- (91) Schaefer, T., Jr., Weingarten, F.S., Towne, J.C.: Temperature Chance: The Basic Variable in the Early Handling Phenomenon? Science, Bd. 135, D.41 f. 1962
- (92) Schiffenbauer, A.: Effect of observers emotional state on judgement of the emotional state of others. Journal of Personality and Social Psychology, 1974
- (93) Schönplflug, W. & U.: Psychologie. Allgemeine Psychologie und ihre Verzweigungen in die Entwicklungs-, Persönlichkeits- und Sozialpsychologie. München-Weinheim: Psychologie Verlags Union; 1989
- (94) Schulz von Thun, F.: Miteinander reden 1 – Störungen und Klärungen. Allgemeine Psychologie der Kommunikation. Rowohlt, Reinbek. 1981
- (95) Schulz von Thun, F.: Miteinander reden: Störungen und Klärungen. Psychologie der zwischenmenschlichen Kommunikation. Reinbeck bei Hamburg: Rowohlt Taschenbuch Verlag; 1981
- (96) Schwarz, N.: Mood and information processing. Paper given at the Tilburg Meeting of the European Association of Social Psychologists, 1984
- (97) Sennet, R.: Der Tastsinn. In: Der Sinn der Sinne. Hg.: Kunst- und Ausstellungshalle der BRD GmbH. Gottingen: Steidl. S.479-495, 1998
- (98) Sheldrake, R.: A new science of life: the hypothesis of formative causation. Anthony Blond, London, Kap. 1 + 2, 1985
- (99) Shermann, M, Shermann, I. C.: Sensomotor Response in Infants, Journal of Comperative Psychology, Bd. 5 1925 / 1927
- (100) Spitz, R.: The influence of the mother – child relationship, and it's disturbances. In: Soddy, K. (Hrsg.): Mental health and infant development, Bd.1. Routledge and Kegan Paul, London, 1955

- (101) Srinivasan, M. A.: Aus Geo – Berührung. Tasten, Erfahren, Begreifen: Wie der Körper den Menschen prägt. 06 / Juni 2006
- (102) Sutherland, W.G.: Contributions of thought. Sutherland Cranial Teaching Foundation, S.34, 1962
- (103) Sutherland, W.G.: Contributions of thought. Sutherland Cranial Teaching Foundation, S.147, 1967
- (104) Sutherland, W.G.: Teachings in the science of osteopathy. Sutherland Cranial Teaching Foundation, S.151, 1991
- (105) Taft, R.: The ability to judge people, Psychological Bulletin, 1955
- (106) Wagener, U.: Fühlen – Tasten - Begreifen, Berühren als Wahrnehmung und Kommunikation, Verlag „bis“ Bibliotheks- und Informationssystem der Universität Oldenburg, 2000
- (107) Watzlawick, P. et al.: Menschliche Kommunikation. Formen, Störungen, Paradoxien. Bern: Hans Huber Verlag, 1969
- (108) Watzlawick, P.: Beavin, J.H.: Einige formale Aspekte der Kommunikation. In: P. Watzlawick, J.H. Weakland et al. Interaktion. Bern, Stuttgart, Wien 1980
- (109) Winnicott, D.W.: The maturational processes and the facilitating environment. International Psychoanalytical Library, Hogarth Press, London, 1965
- (110) Wissenschaftlicher Rat der Dudenredaktion, Drosdowski, Günter u.a., (HG.) Mannheim, Wien, Zürich: Duden Verlag, 1981
- (111) Wittgenstein, L.: Philosophical Investigations. Blackwell, Oxford, S. 178. 1974
- (112) Wittgenstein, L.: Über Gewissheit. Hg. Von G.E.M., Anscombe & G.H. von Wright. Frankfurt/Main.: Suhrkamp (Original 1969: Über Gewissheit. On Certainty). S.20. 1969/1990
- (113) Zimbardo, P.-G.: Psychologie, 6.Auflage. Berlin, Heidelberg, New York: Springer – Verlag. 1995
- (114) Zimmermann M.: Das somatoviszzerale sensorische System . In: Schmidt & Thews. 1995

- (115) Zusmann, M.: What does manipulation do? The need for basic research. In: Boyling, J.D., Palsatanga, N (Hrsg): Grieve's modern manual therapy. Churchill Livingstone, Edinburg, S.657.1994
- (116) Zwisler, R.: Einführung in die Haptik, Universität Bremen. 1998

## 8.2. WEBSITE ADRESSES (URL)

- 1) <http://www.academyofosteopathy.org>  
(sight august 2007)
- 2) <http://www.cranialacademy.org>  
(sight august 2007)
- 3) <http://scirus.com>  
(sight june -july 2007)
- 4) [www.zpid.de](http://www.zpid.de)  
(sight june -july 2007)
- 5) <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi> (Med Line / Pub Med)  
(sight june -july 2007)
- 6) [www.osteopathiccenter.org](http://www.osteopathiccenter.org)  
(sight july 2007)
- 7) <http://www.wikipedia.de>  
(sight april to oct. 2007)
- 8) [www.osteohome.com](http://www.osteohome.com)  
(sight june-july 2007)
- 9) [www.osteopathische-medizin.de](http://www.osteopathische-medizin.de)  
(sight june to august 2007)
- 10) [www.osteopathic-research.com](http://www.osteopathic-research.com)  
(sight june 07)
- 10) <http://metis.hbz-nrw.de> (Hochschule RWTH Aachen NRW)  
(sight june - july 2007)
- 11) <http://www6.miami.edu/touch-research/>  
(Sight june - july 2007)

12) <http://www.deutschenationalbibliothek.de>

(sight july 2007)

13) <http://www.bsb-muenchen.de/>

(sight july 2007)

## 9. APPENDIX

### 9.1. REGISTER OF PERSONS

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## 9.2. REGISTER OF ILLUSTRATION

- (1) Fig.1 (Forgas: social interaction and communication 1999, pg.154)
- (2) Fig. 2 (Lederman and Klatzky 1997)
- (3) Fig. 3 (Point density of the skin senses of the hand per square centimeter)
- (4) Fig. 4 (Moore & Persaud 1996)
- (5) Fig. 5 (GEO june 2004 - touch)
- (6) Fig. 6 („*t h e t o u c h*“ Touch – Perception – Communication)