



Dr. Hans-Wilhelm Müller-Wohlfahrt
Seeing with Your Hands
My Life and my Medicine

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Mein Leben und meine Medizin)
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The Author

Dr. Hans-Wilhelm Müller-Wohlfahrt, born in 1943 in East Frisia, trained as an orthopaedic sports physician in Berlin. He opened his own surgery in Munich in 1978 and was the team doctor of FC Bayern Munich from 1977 to 2015. He took up this position again in November 2017. He has been team doctor of the German national football team since 1995. In 2015, he and his medical team were awarded the Carl Rabl Prize for the book 'Muscle Injuries in Sports'. In 2017, he was awarded the Clinical Pioneer Award by the Fascia Research Society. For more than 40 years, Dr. Müller-Wohlfahrt has relied on his hands to carry out his diagnoses and only works with organic and homeopathic substances according to his credo of safe healing.

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Provence, an unexpected text message on the 10th August 2016 (pp. 8-9)

The text message on my phone startles me. I'm in France, on holiday with my wife and am looking forward to relaxing days with my children and grandchildren. I've been travelling the whole year – mainly on football business. The 2016 European Championships in France were coming up, and I accompanied the national football team to the qualifiers and friendlies. This left little time for family or holidays. I finally found one week to take some time off, reading, working in the garden, jogging or swimming, generally spending time outside... I love the south of France and the house near Mougins that my wife Karin found and decorated so beautifully for us. It is the perfect safe haven for me. The house, which is surrounded by abundant vegetation, lies on a hill, around 20 kilometres from the sea. Karin has made a wonderful garden with big trees and Mediterranean plants. Nothing obstructs the view onto the open landscape from the terrace, and you can let your thoughts flow freely from up here.

But now I read the text message: 'Doc, my muscles are aching, I can't train. What can I do? What do you recommend?' A cold shudder runs down my back, as the person texting me is in Brazil right now, defending his Olympic title, and I am on a different continent. I immediately realise that every minute matters. Karin sees my worried face and asks what the matter is. I tell her about the text message.

Coincidentally, one of my closest employees in my surgery, Imke, is on her way to see us. She also wanted to finally take a holiday nearby and enjoy the sunshine and the sea. We're actually all meant to be going to lunch at U2's frontman Bono's house today. When Imke arrives, we consider what's to be done. My instinct is telling me I need to get to Brazil – as quickly as possible. Then, as if she can read my mind, my wife says: 'You have to go.' I realise how her resolve clarifies my mind. She doesn't hesitate for a moment. Once again, she steps back without making me feel guilty. Once again, she gives me her complete support.

Imke is prepared to come with me, but there is no time to return to her friends' holiday home to pack, and I don't have anything with me either, in particular no passport and especially not my medicine bag. So, I phone the surgery and raise the alarm: 'Gather everything together as fast as possible and send someone to my flat to pick up my passport.' Two members of staff

from the surgery pack the medication and find my passport, then rush to Frankfurt airport to hand it over to Imke and me when we fly into Frankfurt from Nice.

The tension finally leaves me when I am on the plane from Frankfurt to Rio de Janeiro. I think back to the last few days on holiday, to the children and Karin, and I realise: these unexpected things happen in my life time and again – as well as many happy coincidences.

My parental home as a foundation

(pp. 10-11)

Childhood, adolescence and starting out

My parental home was a great foundation for the rest of my life. We lived modestly and yet we had everything that we needed. Faith, music, discipline and sport characterised my life. In different surroundings, I would not have become the person that I am. Today I see how lucky I was and how protected we were but, at the time, our small East Frisian village quickly became too small for me.

I am the youngest of three brothers and was born in Leerhufe in East Frisia during an air raid in 1942. I shared a small room with my two brothers, Hajo and Dieter, as, like all the houses in our village, we had taken on a refugee family after the war. The family had two children. A teacher also lived with us in this small brick house for a few years, as well as a domestic help.

At the time, we had a cow, a pig, a sheep, chickens and a large vegetable and fruit garden. We grew up close to nature, the life cycle of man and beast was very familiar to us and we experienced the change of seasons with full intensity. I wish every child could have this experience. We saw how a cow calved, we were there when a pig was slaughtered. This intense contact with nature certainly played a part in my reluctance to work with chemical substances as a doctor, which still continues to this day.

My mother's cooking was varied and healthy. In summer, she would prepare for the winter, as was customary at the time, preserving fruit and vegetables in jars. Sugar beets were made into syrup. On Fridays we had fish, on Sundays a roast – and there was plenty of baking. We even made our own butter, which was prohibited in the first few post-war years, which had to be done in secret. At the end of the month, money was always tight, and we had to put our purchases on the slate at the local shop. I later found the booklet in which my mother noted down what she had purchased and was very touched by my parents' frugality. When my father's salary was paid out, he paid off the debt with the shop and we children always got a bar of chocolate, which we had to divide up between us. I don't think chocolate ever tasted as good to me as that precious piece that we got once a month. [...]

I wanted to become a doctor – my father was dead against it

(pp. 28-32)

I had been keen on studying medicine from the age of 16. My class-mate Wolfgang Junge's father was chief physician at an emergency hospital. Once we were allowed into the operating theatre: a patient who'd been in an accident with massive trauma to the liver, spleen, diaphragm and lungs had to have emergency surgery and we were allowed to watch. What I saw there fascinated me so much that from that moment on, I was set on becoming a doctor.

But I was also interested in electrical engineering and liked to build radio sets and receivers with a friend. I also considered becoming an architect.

My father was not at all taken with my idea of becoming a doctor. He would so have liked me to study theology. As a vicar, he had a near-aversion to the 'demigods in white' as they are known in Germany. In his opinion, the medical profession spoiled one's character, and he told me quite clearly that he would not be able to support me should I choose this career path.

When school was finally over, and I just about managed to pass my leaving examination, I realised that my grades were not good enough to study medicine. But I was optimistic that I would somehow muddle through.

Before deciding on a university and a course, I was called up to do my military service. I dreamed of joining the mountain infantry in Bavaria or the paratroopers in southern Germany – at least this is what I applied for. I wanted to carry out my military service far from Leefhafe. That was my greatest wish. Instead I ended up in nearby Varel with the mechanised infantry, just an hour and a half from home.

Because of the prospect of a good lump sum after a successfully completed officer's career, I signed up for two years and became a reserve lieutenant. I have to say, I quite enjoyed the tough training. I saw 35-kilometre marches in ice and snow as a mere challenge. In the end, I received a 7500 Deutschmark lump sum. This allowed me to finance my studies.

As expected, I could not study medicine at first. I enrolled for several natural science courses in Kiel and secretly hoped that I would be able to take up medicine studies at some point. During my studies, I continued my training with Holstein Kiel sports club and became state pentathlon champion for Schleswig-Holstein.

In the year that I enrolled, there was a fierce public debate amongst the universities and with the state government as to whether those students who didn't meet the required grades – the so-called *Numerus clausus* – should be allowed to study medicine after all. One of the strongest advocates for such approval in Kiel was Professor Alkmar von Kügelgen. In his opinion, it shouldn't just be the grades that were the deciding factor, but a suitable character, good general knowledge, creative hobbies and an interest in music. In addition, there was to be an admission exam and a colloquium. It was thanks to his influence that those studying natural sciences were subsequently allowed to study medicine if they passed the admission exam. This was a unique opportunity for me and around 350 other students who applied. But only 15 were to be selected. The final selection would be based on a curriculum vitae, an intelligence test and knowledge of anatomy.

I had been given anatomy books by our local GP. I studied them day and night until I was up to the mark – the old volumes with their yellowed pages, their wonderful illustrations of the structure of the body, the organs, bones, tendons, muscles and so on, still stand in the library of my surgery today. I could draw every bone and precisely describe every part of the body, internally and externally.

Before the admission exam, it seemed that my background would turn out to be a true blessing. Professor von Kügelgen – according to an article in the *Der Spiegel* in 1966 – had a precise vision of what a potential medical student should have, which I conformed to, with one exception: 'Those wanting to be capable doctors ought to have crafted a glider as a boy, played the cello in a chamber orchestra to the level of early Haydn and ideally not have repeated a year in school.'

When I was called in to Professor von Kügelgen, I told him about my sporting interests and my competition successes, and he asked me: 'What else do you do?' So, I told him about my passion for music and listed the instruments that I played. Then he asked me: 'What else do you do?' So, I told him about my passion for physics and electrical engineering. He asked me about my life so far and my hobbies. While I was answering, he kept looking out of the window, so that I had the impression he was not really interested in me. But he understood me. At some

point he must have said: I'll give this man a chance – and so it was. A few days later, I heard that I had been accepted.

Fate was always good to me. The course was set, like so often, and so in 1965, I began to study medicine in Kiel. My father was still alive and, although he was anything but delighted with my choice of career, my ambition and tenacity pleased him.

Of the small group who began the course as newcomers, all of us passed the preliminary medical exam with flying colours. But we didn't only study. We also enjoyed the summers in Kiel to the full: slept on the beach in sleeping bags and beach chairs, made music, swam and sailed. One of us always took notes during lectures for the others and when necessary, we had what I would call a high learning capacity. We quizzed each other and were so successful in our exams that our professors delighted in us. Especially for Professor von Kügelgen, we were the living proof that a mediocre school-leaver could make a successful medical student. After the preliminary medical exam, I switched to studying in Innsbruck, along with several others from the course. However, because of the closeness to the Alps, we spent more time skiing than attending lectures and it turned out to be a slack term where studying was concerned.

Nonetheless, I still passed the clinical terms. A new chapter began with my doctoral thesis. My chosen field was heart volume measurements in animals, which was extremely time-consuming and laborious. The results were meant to help children suffering from a heart condition. For the necessary experiments, I had to procure rabbits and pigs from the local market, and later organise dogs from the dogs' home, on which to carry out the measurements (the animals came to harm, by the way). I did this evenings and nights in an x-ray room, which was not used during that time. With the aid of a fibre optic, which I had attached via the aorta, I carried out an x-ray density measurement; and a densitometric indicator-dilution curve of the contrast agent, which I injected through a catheter into the left heart ventricle, was created. The volume of the left heart ventricle could be approximately established via this so-called washout curve. Much to the pleasure of my doctoral supervisor, a summary of my research was published in the American Journal of Cardiology and in 1971 I was awarded my doctorate.

On to Berlin – a dream comes true

(pp. 32-35)

Following my studies, I considered what was to be my next move. I was free – and all single people are desperate to go to Berlin. The flower power vibe of the 1960s California had spread to Berlin. There was always something going on there. I was attracted by this. I was full of life and ambition – and this characterised my years in Berlin. At first, I lived in Wedding, then in Kreuzberg – intentionally not in student accommodation but instead in a rented flat, which hadn't been renovated since before the war. It was not very comfortable, as the flat only had one toilet midway up the stairs and no bathroom. To wash, you had to pour cold water in a bowl or, after going for a run, for example, mix hot and cold water in a zinc tub and pour it over yourself instead of a shower. At the time, I loved it.

So, I had moved to Berlin in 1971 with this lust for life and I became the medical assistant of the legendary heart specialist, Emil Bücherl, who carried out one of the first heart transplants in 1969, two years after Christiaan Barnard. So, a real pioneer. Once my shift was over, I sometimes slept in the afternoons so that I would be fit again in the evening. I would meet up with friends at 11 pm in Café Bleibtreu in Charlottenburg and often came home very late at night. You have to be young to cope with a lifestyle like that!

After my time with Professor Bücherl, I joined the casualty department in Spandau. There was just this one clinic for roughly 300 000 people, and the emergency department was so busy at night that there was no chance whatsoever of sleeping. I wanted to get a position at

the Rudolf Virchow Hospital with Professor Fritz Hofmeister in orthopaedics. He had a brilliant reputation. However, in the very open and positive interview, he did not give me much hope of an opening anytime soon. He put me down on the waiting list – number 34. So, it would be a while until it was my turn. But he must have changed his mind overnight, because the next morning I unexpectedly got a call saying that I could start working with him. So, fate had once again smoothed my path. I was to attend all of his medical rounds and cover the private patients – an honour for me, but also a challenging obligation.

Music continued to play an important role in my life. I was fascinated by the Berlin Philharmonic Orchestra under Herbert von Karajan and tried to get a ticket as often as I could. I was still enthusiastic about jazz music – especially the big jazz musicians from around the world, for example during the jazz festival in Berlin in the Philharmonie concert hall. I visited the best clubs, especially in what was the alternative neighbourhood at the time, Kreuzberg, and I got to see the legendary B.B. King, among others.

Back then, orthopaedics was of particular interest because there was a direct correlation between sport and medicine. As an athlete, I had learned to feel every single muscle, tendon and bone and thereby developed a good sense of my body. The term ‘sports orthopaedics’ did not yet exist when I was carrying out my studies and training, but I knew early on that I wanted to work in this field. I was able to gain surgical experience working under Professor Fritz Hofmeister. I assisted him with all sorts of operations on a daily basis or operated on my own.

After three years with the professor, he came over to me one day and said: ‘Do you know what? I signed you up as team doctor with Hertha BSC.’ Hertha was a top club, who had just made second place in the German premier league. He hadn’t asked me in advance but knew how much I was fascinated by sports. Hertha had actually wanted to hire him, but he turned them down because of time constraints and instead recommended me. I was 32 at the time and I had no idea how this decision, in which I had no say, would change my entire life. As I was an athlete myself, had attended several sports-related lectures during my medical studies in Kiel, taken massage courses to broaden my knowledge, I began my new job with Hertha BSC in 1975 with curiosity and enthusiasm.

My predecessor as team doctor was Professor Manfred Weigert. He was so stretched in his capacity as a surgeon and head physician of an orthopaedic clinic that the players often had to wait a long time to see him, but he had an enormous amount of experience. When I began with Hertha BSC, I had no such experience, as reacting to acute cases on the field is quite different from treating one patient after another in a clinic.

I thought about how I could make things easier for the players and started monitoring and examining them while they were training in the Olympic stadium, so that they didn’t need to come to the clinic. So, I began to watch and if necessary treat players on site. During my massage training, I had learned what a healthy muscle feels like and how a damaged muscle differs from this. I could trust my hands and the signals they gave me. At my side at the time was a very experienced and valued sports physiotherapist, Peter Bentin. Despite the successful start with Hertha, I knew that I had to practice, practice and practice some more if I wanted to make it and be accepted. At the time, there was no ultrasound or MRI scans available. Now I can say: thank goodness.

After each training session, I would drive halfway across Berlin to return to the clinic - I still had my main job at the Virchow Hospital. I wanted to complete my specialist training as quickly as possible and knew that I had to produce first class work.

The Hertha BSC team had taken well to me and my treatment methods. One or two of the players in the national team - there were four or five at Hertha at the time - may have spoken of me positively, so that I eventually came to the attention of Munich. [...]

Jupp Heynckes

(pp. 105-107)

'We are so close because we share common values'

When I am asked what the key to my success is, I always answer that success is dependent upon many factors. In my years as an active sportsman and later as a coach, we were always successful when the trust and the team spirit were strong. Even if this is not the only nor the ultimate key, for me, all other factors stand on this foundation.

After we won the Cup Final in 2013 against Borussia Dortmund, we wanted to take a photograph of the team and all those involved with Bayern and of course, proudly show off our four trophies – the League Trophy, the Championship Shield, the Champions League Cup and the Cup Final Trophy. We called Mull in his surgery, as we wanted the medical team to be in the photograph, but Mull said he couldn't come because his surgery was full. So, after our official photo session with Bayern, I asked the security team to pack up the trophies and bring them to Mull's surgery, and I followed in my car.

So, we turned up in the surgery out of the blue and it was mad. We took the photos with Mull and the doctors and staff in the surgery with the trophies. Everyone was really happy and so was I. This showed our appreciation of the entire surgery team, who had always taken care of us and for whom none of our calls had ever been too much trouble – when we had needed an urgent appointment for Arjen Robben, Bastian Schweinsteiger and Franck Ribéry, they had done everything possible.

The head of the medical team is of course Dr. Müller-Wohlfahrt. He is a doctor whose impressive abilities and qualities were, in many respects, invaluable to me, the players and the club and now are once again. You just have to picture all the things we managed to achieve together in the years 2011 to 2013. In this entire time, there were just three muscle injuries, and overall, FC Bayern was the club with the shortest list of injured players. We achieved this because we communicated closely and trusted each other's expertise and had the same goals.

We worked together intensively for a total of six years. We are very close, because we went through and achieved a lot together and because we share common values. In my opinion, Dr Müller-Wohlfahrt is a genius and, in his field, he is without a doubt a true expert. He is a master of his trade who follows his vocation with a great deal of discipline, passion and dedication. But he is so much more than 'just' that. Mull has great empathy – and for this alone you have to like him. You quickly recognise this when you watch him work. Or when you listen to the way his patients talk about him. I have seen a lot of things during my time with FC Bayern, but someone who treats people with so much fervour and passion, who is so happy when he can help ... there's no one else like him.

I remember when Franck Ribéry pulled a muscle in the training camp at the Tegernsee and couldn't run any more. Mull happened to be there and decided, together with the physiotherapist Fredi Binder, to conduct a therapy programme that consisted of alternating physiotherapy and Mull's treatment. So Ribéry was supposed to cycle, then receive treatment, then cycle and then go on the running machine. Franck came to me when he was much improved and said: 'It's a miracle to me.' Two days later he was playing again – brilliantly. That

is one example of many, but that's why the players will go through fire and water for the doc. Faith in the player and the player's faith in the doctor are essential.

Uli Hoeneß knows Mull very well, and if Hoeneß had been there at the time, a confrontation like the one in Porto would never have happened. Uli can crash about sometimes, but when he realises he has gone too far, then he says so. Uli is an authoritative figure with a strong personality.

The thing that always really impressed me about Mull was the way he carried out his examinations and then made his diagnosis. He used his hands extensively and showed great patience, until he was convinced that he knew the diagnosis. It didn't matter how long it took - diligence is everything to him.

I know that he often put on his sports gear to train late at night. This requires major effort and a similarly strong mindset. Added to this is his great discipline. This is what connects us, as I am also convinced that discipline is simply part of life. It is important for people to have a focus.

During our years together with Bayern Munich which, much to our surprise, have now been resumed, we have always respected, valued and trusted one another. One of my maxims as a coach is never to criticise the team doctor, but to fundamentally accept his decisions. There was not one single dispute between us in all those years. When we see each other, we don't have to do much talking. We understand each other implicitly.

Jupp Heynckes

The unexpected end

(pp. 108-110)

Deciding game in Porto on the 15th April 2015

The climate within FC Bayern Munich changed under Pep Guardiola and it became more and more apparent that he did not trust me or my team. On the one hand he had absolutely no interest in medical issue, but on the other hand demanded that we carry out miracles.

On the 13th January 2013, FC Bayern Munich announced that after months of secret negotiations in New York, they had signed Pep Guardiola to be their new coach. I was, like everyone in Munich, absolutely delighted: the most revered football coach in the world, who had turned FC Barcelona into what was possibly the best club of all time, had collected 14 of 18 possible trophies in just 4 years and had won the triple in his first year, a charming, cosmopolitan, good looking man. We were on cloud nine. I floated along with the others and was probably the first one in the club to fall back down to reality with a bump.

My enthusiasm lasted exactly three days. Our first meeting took place in the training camp in Riva on Lake Garda. The first day went all right, the second too, but already on the third day, Guardiola came over to me and snapped at me: 'What's going on here? I thought I was joining the best medical department in the world, and we have two permanently injured players who according to the initial diagnosis, should have been fit a long time ago. What's going on?' His tone was aggressive and reproachful. The injured players had both been operated on by renowned surgeons, but their recovery was not going according to plan. Guardiola was extremely upset and suggested that I had sent them both to the wrong surgeon. There were far better surgeons in Barcelona, they were his friends. I looked at Guardiola in

astonishment during this first altercation, but quickly got a grip on myself and hoped to discuss the matter with him in a calm manner.

However, that was not possible, neither at Lake Garda, nor later on in Munich, because he was always extremely tense. He didn't not seem like a self-confident man full of energy to me, but like a person permanently put out. And it became ever more apparent that Guardiola did not trust me or my team, let alone appreciate us.

The tension mounted after the training camp at Lake Garda. Guardiola demanded that I be present at every training session. He clearly saw me as an underling whom he could have at his disposal whenever he wanted. I told him that Bayern Munich was very close to my heart, but that I still had my surgery to run. But he was not interested. Initially he must have wrongly believed it would be easy to assert himself against me. But when he noticed how much backing I had from the team and the club, he became even more annoyed.

Guardiola turns the clock back with his training methods (pp. 110-115)

Guardiola was presented as an innovative, if not revolutionary, trainer by the media at the time. But he turned the clock back tremendously with FC Bayern. He even went as far as doing away with our medically well-thought out pre-training preparation programme, which had been proven over years. We had long instilled in the Bayern players the importance of an intensive warm-up programme and subsequent, extensive stretching of the muscles. Former trainers knew it and followed my advice. The muscles were dynamically stretched after the warm-up and before training began, specifically adapted to football purposes. I had introduced it under Udo Lattek and continued to develop it according to the latest research. During Lattek's time, this technique was known as 'static stretching' and was only described in American textbooks - which was why I had written down the most important exercises in German for our players and the coaches and distributed the notes during a team meeting. Lattek had made fun of me at the time, as he often did, because I had once again introduced something new. But from that day on, the stretching became part of our programme, with no argument.

Right from the start, I ensured that the players had a large preparation room to warm up with machines, mats, balls and rubber bands. And I gave them part of the responsibility for their own bodies: each player was recommended specific exercises, depending on his weaknesses. But each player also had to learn which exercise was best for him. So, we had individualised the warm-up training. It worked wonderfully and became a firm ritual. Every single coach maintained this ritual with great dedication, as they were richly rewarded: the players were more flexible and had better control over their bodies. In addition, for many years, FC Bayern Munich was one of Europe's top clubs with the fewest muscle injuries.

I remember a season under Jupp Heynckes, during which we had just three muscle injuries. This is an extremely low number given the demands made upon the players. I am not relying on my memories here or my gut instinct, but on the official UEFA Elite Club Injury Study, where FC Bayern is always listed as one of the clubs with the lowest amount of injuries.

Then Pep Guardiola arrived. And in the very first season, we had far, far more muscle injuries than in the successful season of 2012/2013. And he always knew best: five minutes warm-up in double time, that had to suffice. But it couldn't end well. During the club championships in Morocco at the end of the first round, attentive spectators must have already noticed that the Bayern players did not seem fit. I knew that it was because the basic training in the preparation for the season and during the preliminary round had been neglected. Running is the key to fitness. The running training forms the foundation that cannot be laid later in the season. After the long-term stamina training, the training leads up to the mid-term

stamina training, in other words to intervals between sprints and rest periods. Only then does one increase to sprint and to training the sprint stamina training. For me, this is the safest way to create the stamina foundation for a season and to prevent injury. When a training foundation like this has been created, the muscles recuperate much more quickly after a sprint and are proven to be less liable to injury. However, under Guardiola, the emphasis during training lay on speed stamina, meaning constant sprints, over and over, up to the limit – and sometimes beyond.

The first season preparation was already difficult. After just a few training sessions the team flew to the US and played in three different cities, which were far apart from each other, without adequate time for recuperation, always rushing from football field, to airport to hotel. This meant a lot of stress for the players, and it lacked any sort of appropriate training build-up. This was not Guardiola's responsibility, because the season planning had been made before his arrival. However, he didn't intervene, but let things take their course, although from a medical perspective these preparations were completely irrational.

But I simply could not reach Pep Guardiola with the way I thought and worked. Even my reports about the injured players did not interest him. Whenever I wanted to speak to him, he immediately turned away and left. There were situations where I would stop players from training for a day for preventative reasons, instead giving them physio treatment, in order to then release him back into training the next day. Guardiola commented: 'What's he meant to have? A one-day injury? That doesn't exist.' Yes, it does, for example in the case of neurogenic muscle hardening: the muscle is accessed wrongly by the nerves that supply it, it shortens, takes on a painful tension and becomes inelastic. The player feels unsteady and is afraid that the muscle might tear. So, I stop him, examine the painful muscle and the spine, where the cause is usually found in the form of a nerve root irritation, and I treat it. This ensures that the muscle tonus normalises within one or two days. Then the player feels much better, and he can train without discomfort or risk. However, Guardiola didn't want to know anything about this preventative method of protecting from serious muscle damage. He simply didn't understand my preventative approach. And to this day, I cannot understand how a man who sees himself as a football philosopher can show no interest in the medical department and its therapies.

Things had been different with Jupp Heynckes, Louis van Gaal, Ottmar Hitzfeld and Udo Lattek. They were always well informed about my working methods and gave me their trust precisely for this reason. In contrast to Guardiola, they observed the treatment carried out in the dressing room, they watched as problems were solved with precision, concentration and experience and also knew that the treatment usually took place without pain medication or cortisone. Giving pain medication to numb the pain in order to make a player fit was and is now not my style. I always have and always will take symptoms seriously and not suppress them.

The tension between Guardiola and me increased over the next few months. Each time I removed a player from the pitch because of a muscle injury, the coach was annoyed. It was laughable, he could carry on, he said, incensed. One time, Arjen Robben had a nose bleed and the blood was pouring out. I was supposed to stop it within one minute and I needed approximately two. Guardiola stood next to me and shouted at me, I should hurry up, things were taking far too long for his liking.

I had never experienced anything like it!

The culmination of this altercation was Medhi Benatia's injury during the game against Leverkusen in 2015. When he had to come off the pitch, Guardiola applauded mockingly in the direction of my colleague Dr. Ueblacker, who was sitting on the bench as the supervising doctor and slammed his hand on the top of the coaches' bench.

After my refusal to attend every single training session, there was a discussion between Guardiola and me. I was still willing to find a compromise and told him that things could not go on like this and that we needed to pull together and communicate more effectively. At this point I was convinced that our relationship could be fixed, and we would find a way to work together. That was six months after he was appointed.

And then something happened that would lead to the final break-up. [...]

Safe Healing My medicine

(pp. 176-184)

Feeling and assessing muscles and identifying problems with them has fascinated me from my first day as a young doctor. The holistic approach to medicine which I and my surgery have involves the detailed manual and functional examination of all orthopaedic disorders. I am in close, direct contact with each patient and I feel my way towards the cause of the complaint with great care, until I have understood it and believe that I can help.

Even before I began my medical studies, I knew that I wanted to be a specialist in orthopaedics and sports trauma. Everything else was out of the question.

Interestingly, my father, who was not at all happy about me becoming a doctor, played a deciding role in my choosing this route into medicine. He transferred his enthusiasm for sport and his sporting ambition onto me, thereby awakening my passion. Through sport, he also taught me discipline, on which he placed so much value. He wanted me to know what it is to have success – and that special moments require a special effort. I had no choice but to combine my passion for sport with my enthusiasm for medicine.

As an athlete, you deal with your body and your injuries in an intense way. This was and is the same for me to this day. With the beginning of my medical studies, my interest in sporting injuries went beyond my own body and my own sport. I was eager to gain new insights and experiences and so right from the beginning of my medical studies, I attended sports-related lectures, practical exercises in different types of sports. I also attended massage courses and learned to feel muscles, to assess and identify problems. Step by step, I embedded these impressions in my memory and developed a better three-dimensional perception of the muscles and the body. This knowledge has characterised the path my career has taken and the way in which I diagnose and treat to this day.

I started my career at a time where there were no imaging methods. Ultrasound and MRI were only gradually introduced over time.

It is hard to believe, but muscle damage was and is not an integral part of the medical teaching curriculum. It was a kind of 'zero hour' in sports orthopaedics at that time and the only tool, the only aid that was available to give me insights were my hands. For this, of course, I had to have direct contact with the patient. I literally felt my way towards my insights and future examination and therapy methods.

However, this situation did actually help me, as I always want to understand the fundamentals of what I do, and so it wasn't enough for me to simply look inside the textbooks. I wanted to truly 'grasp' what was going on. After all, that was the reason I studied medicine.

But at the time, there were no stipulations as to what constituted a trained orthopaedic sports doctor. Sports doctors were usually specialists in internal medicine who primarily dealt with measuring the athlete's performance, heart and circulatory system measurements as well as lab investigations. Specialist sports orthopaedics or traumatology did not yet exist. In my opinion, classic orthopaedics focussed too much on the bone skeleton.

Because I had trained my own body for years, I knew the importance of the function of the muscles, tendons, fascia, ligaments and tissues. I wanted to understand the structures and how they worked together in a complex way and so I found my own way within medicine.

To me, modern medicine means not leaving anything out that might help the patient but without causing any further damage. The body must be supported in its enormous self-healing power and the body's response to injury and overload must never be masked by drugs. Similarly, the goal must also be to avoid side effects.

Early on, I opted for natural healing methods and against chemical drugs. The validity of these decisions was confirmed again and again over time - on the one hand by my own experiences and therapeutic successes, and on the other hand by events where the health of athletes was damaged by treatment such as cortisone.

For a long time, my alternative methods were dismissed by experts. In an orthopaedic world that is dominated by operations and which sees cortisone as a 'universal remedy', I was viewed as a sort of renegade. However, the success I have in treating my patients, as well as the nationwide inflow of new patients, gives me the right to carry on.

Maybe the animosity stems from the fact that I simply don't have enough time to communicate with my colleagues at medical congresses or other meetings. The work with my patients was always the most important thing for me.

And so, I am all the more pleased and satisfied that my ideas and developments have gained more and more acceptance over the last few years. Cortisone is increasingly being viewed critically in professional circles, while organic therapies are increasingly asserting themselves in the field.

Meanwhile it has been proven that physical examinations, for example in the case of muscle damage, has a higher validity than imaging methods. To me, modern medicine also means not relying purely on modern technology.

In the course of increasing digitalisation, a patient's account of their medical history is increasingly curtailed, and the patient is barely heard any more. This means not only passing up the chance to build up trust with the patient and find out as much of his or her history as possible, but also missing out on the simplest and most reliable methods of diagnosis.

It is the conversations with the patients that establishes a relationship and shows them that I am genuinely interested in helping them. I don't discharge any patients without having tried to definitively identify the source of their medical complaints and without offering them a therapy of some kind.

It is important to me that the patient feels my commitment and that a bond of trust can be developed. It is often underestimated how important a relationship based on trust between doctor and patient can be for the course of the therapy - not least because such a relationship usually relieves the mental pressure on the patient.

The patient's account of their history and the result of the physical examination are more important to me than using technology; these things help with diagnosis and therapy. I see imaging methods as a supportive measure, used in combination with them, to ensure a diagnosis. The patient should and must be the main focus.

It is deplorable that young doctors make life easy for themselves by relying on the MRI scan for the diagnosis of the injury, so as not to have to take on any responsibility. It is precisely

using and improving their manual capabilities and thereby gaining knowledge that would offer them the missing assurance.

Maybe in the distant future it will be possible to significantly improve the diagnosis of muscular problems through the further development of imaging, in particular in MRI with ever higher resolution and to depict the varying extents of structural injuries ever more differentially. It is also feasible that in the future it might be possible to carry out muscle diagnostics through diffusion measurement on a microscopic level. But until this happens, clinical examinations are essential. And even if the time comes for differentiated imaging, it is still worth keeping the manual examination in the forefront. Only in direct interaction with the patient can complex connections be discovered and only in this way can important insights and impressions be gleaned for the diagnosis and therapy.

In order to improve the MRI diagnosis in our work, my colleagues and I placed great importance on a radiology department with the best possible machines being attached to our new surgery rooms in 2008. This ensured that we would be able to discuss cases with the radiologist and then go through the results together with the patient and the radiologist on site. We see this methodology as an improvement and are very happy to have this option.

Unfortunately, doctors nowadays have less and less physical contact with the patient. The physical examination is losing ever more ground against high-technology medicine. I didn't and don't want to work like this. In orthopaedic diagnosis, where it's about the mobility, flexibility and stability of joints, muscles and ligaments, a physical examination is not even carried out in every case. Not only the examination, but also the conversation between doctor and patient is short-changed nowadays. According to Professor Dr. Johannes Huber from the Medical University in Vienna, statistics show that the conversation between doctor and patient is cut off by the doctor after 18 seconds. Usually, doctor and patient spend the most time on the carrying out and analysis of technical examinations, on x-rays, MRI or ultrasound examinations, which nowadays form the basis of the therapy. Many of our senses have largely been replaced by machines in modern medicine, which also comes down to the fact that images are considered more credible than, for example, diagnoses which were made by a doctor's hands. And yet we doctors are supposed to use all our senses and examine with our hands, to 'grasp' and 'handle' the findings.

When I was team doctor with Hertha BSC in 1975, in-depth manual examinations were completely unheard of. Doctors or physiotherapists only checked the function of the limbs, moved the legs, pressed on the muscles in the injured area and asked: 'How does this feel? Does it hurt here? Do you think you can train?' And so, the player was allowed to go back onto the field and risk a worse injury. And yet an injured muscle must be examined through a physical examination by means of palpation – using the finger tips along and across the muscle tissue and along the muscle – in order to exclude a bleed or a muscle tissue severance. But that wasn't carried out as a matter of course as it also wasn't taught. All too often the athlete himself decided when he returned to team training or a match. And that is wrong, because muscle damage quickly stops hurting and the muscle is then often used again before it has had time to heal. A reason for many renewed injuries.

So maybe this is why my later, fully differentiated diagnoses of muscle injuries – whether we were dealing with a strain, a muscle tissue tear, a muscle bundle tear or muscle disorders influenced by the spine – remained misunderstood for so long and were therefore not accepted.

I am convinced that no technology in the world can compare to the human sense of touch. Until now, no piece of equipment can identify the increase in tension in the muscles the way it does in a fascia tear – because the muscles close to the injury try to protect it, so it can

heal in peace and take on a normal tonus again when the injury has healed. The muscles and other tissues cannot be depicted three-dimensionally, but only in thin layers two-dimensionally, even though this does come relatively close to a three-dimensional depiction. The findings are made via the different signals of the tissue being examined and then transformed into 'artificially created' images. This is a mathematical matter! I am very doubtful whether a machine could ever replace the sensitivity of experienced fingertips.

Of course, it took years for me to develop the ability to feel out and assess muscle injuries within deep layers of tissue. I trained myself through regular and frequent practice and became confident.

I am particularly thankful to the Munich-based physiotherapist Hans-Jürgen Montag, from whom I learned a great deal during the first years of my career and who became a good friend. We regularly met once a week, sometimes late at night, and talked shop. Sadly, he died much too early. Hans was able to feel out in an inimitable way, and when I still had my old surgery near the Marienplatz and he had his at the Gärtnerplatz, I would always send athletes to him in order to get his assessment of the injury.

Sometimes I would run across the Viktualienmarkt during consultation hours to his surgery. My patient would already be lying on the massage bench and we would examine him together. In this way we would advise and train each other and give each other confidence.

Today I would say: if you've felt an injury – for example a muscle tissue tear – right 'through your fingertips', you will never forget this sense of touch ever again. It is stored in your memory for all time and can be called upon anytime. This happened to me 40 years ago, and I can recall this precise touch finding again and again – and I know exactly what I'm looking for.

I diagnosed a muscle fibre tear in Jürgen Klinsmann's calf during the quarter finals of the European Championships in 1996, together with Hans Montag, who had been the physiotherapist of the German national team since 1984. We felt out the tear using this method and Klinsmann had to be substituted. The next day we treated him according to our method and managed to get him fit just in time for the final – Germany against the Czech Republic in Wembley - so that he could play as captain right through to Oliver Bierhoff's golden goal. [...]

Usain Bolt

(pp.220-223)

The sprinter of the century

When I met Usain Bolt in 2002, it seemed uncertain whether he could remain a successful sprinter. Despite his incredible physiology, Usain had physical problems from the start that we had to work on. Over the years, we have developed an unusual relationship.

One summer's day in 2002, a 16-year old adolescent stood in my surgery, a muscular giant, whose shyness didn't fit in the slightest with his imposing appearance. I had never heard his name before. But his manager Ricky Simms assured me that the boy was already famous in his home country of Jamaica and that he was considered an enormous talent in athletics sports. He had won the junior world championships in sprint, won all the trophies across the different age groups, and achieved amazing times – but he had a problem with his spine. It was a lateral deviation of the longitudinal axis and an accompanying rotation deformity that we see often in our surgery and which can often be improved through stabilising or rather corrective gymnastic exercises and osteopathic treatment. But this young man wanted to have a career as a high-

performance athlete, which required him to put his spine under extreme stress day after day. His manager just wanted to know one thing from me: was there any point in investing time and energy in this boy? Could we justify letting him continue with high-performance sport without him being physically damaged?

I took a lot of time on him: I did my function tests, examined and mobilised all his joints, assessed various muscles and ligaments, examined his spine in all possible movement planes, measured his pelvis and the spine with an x-ray, determined the definitive length of his legs to the last millimetre and carried out various additional imaging techniques. At the end of the examination, I spoke one sentence that to this day still seems well judged. 'He can carry on training, I take responsibility on condition that we stay in constant contact, that the boy comes to see me in Munich on a regular basis and that I am immediately informed if he has any sort of injury.'

Today I know that this was one of the best decisions of my life. But there is something else I do not know: what would have become of this young athlete if he had been advised from the point of view of purely conventional medicine.

14 years have passed since then, during which Usain Bolt has become a friend to me and other members of my family, much more than simply a patient. I can clearly recall exactly how I immediately took him into my heart when he first came into my surgery. Was it his authenticity, his straightforwardness, his appealing shyness? I don't know, and it doesn't matter. The only thing that counts is the pleasure that I feel each time I see Usain again.

When I first met him, I could never have guessed that Usain Bolt would become the best sprinter of all time. Nobody would have been able to predict it at the time, if for no other reason than the fact that sprint races were dominated by athletes with a completely different physique than that of Usain Bolt. The usual phenotype was the muscle-packed powerhouse 1.80 to 1.84 metres tall, who accelerated like lightening, ran along the tartan track like the devil and came across the finishing line like a horse in full gallop. People like Carl Lewis, Linford Christie, Maurice Green, Tyson Gay or the doping offender Ben Johnson won the medals and were considered invincible. With his height of 1.96 metres, Usain is a giant with lanky extremities, who appears to come out of the blocks slowly and who takes ages to reach his tremendous final speed – but then, however, moves with an inimitable elegance. Such a giant must surely run the 400 metres, that was my first thought, although he is actually too heavy for such a distance. But a sprinter on the short distance who was able to beat a muscle machine like Maurice Green? Unimaginable! A sprinter who was to remain unbeaten in the sprint over nine years in all major races and championships? [...]