

“I am a neurologist in an academic environment. As a professor of Neurology at the University Department in Würzburg, I have a strong research and clinical interest in movement disorders.”

**Prof Jens Volkmann**, Chairman of the Department of Neurology at the University Clinic Würzburg, Germany



### 3 Questions for Prof Jens Volkmann

#### What is your experience with deep brain stimulation and movement disorders?

“During my medical studies I focused on the area of movement disorders and since 1995 I have worked in the field of deep brain stimulation (DBS). At that time I was working together with Prof Sturm in one of the first centers to perform DBS in Cologne, Germany.”

#### What do you like most about your job?

“I like most about being a movement disorder specialist that we have many treatments available today that, like DBS, have a profound impact on improving patients’ lives.”

#### What’s your one piece of advice for people with dystonia?

“Consult a specialist early and look for an expert that can accompany you throughout the course of your disease.”

#### The ‘Sweet Spot’ in Deep Brain Stimulation: How New Directional Systems May Advance Treatment of Dystonia

“When I started working in neurology 25 years ago, the neurologist was basically the one physician, who knew everything about the

patient. He could come up with a perfect diagnosis but unfortunately there was nothing he could do to help the patient,” Prof Jens Volkmann, Director and Chairman of the Department of Neurology at the University Clinic Würzburg, recalls the beginning of his medical career. Today, there are a variety of therapy options available to treat movement disorders.

#### **Deep brain stimulation** – a universal treatment for movement disorders

Today, there are a variety of therapy options available to treat movement disorders. One of these therapies is deep brain stimulation (DBS). “DBS is a method to treat disorders caused by dysfunctions of brain circuits. This is particularly well established for movement disorders such as dystonia, Parkinson’s Disease or tremor, where the circuits are well researched and one knows where to intervene and to block the spread of abnormal activity.” DBS therapy involves mild electrical impulses generated by a stimulator, implanted around the chest, similar to a pacemaker. The electrical stimulation travels along thin wires, called leads, to specific areas of the brain. In Europe, DBS is approved for the treatment of Parkinson’s disease, essential tremor, parkinsonian tremor and primary and secondary dystonia and may help improve daily life for patients.

Fewer side effects and improved symptom control

The advanced technology of the new DBS systems not only supports physicians in providing personalized therapy, it also changes the risk-benefit relation of the procedure significantly. “Conventional systems were not able to deliver precise electrical signals. In addition, minimal deviations in the positioning of the electrodes that were inherent to this complicated procedure might have decreased potential treatment outcomes. With the new directional system, such uncertainties can be compensated through the programming after the surgery,” says Prof Volkmann, “You can think of the new directional system as a lighthouse. Similar to the light, electrical signals can be steered in certain directions by programming the electrodes, and thus avoiding side effects caused by unwanted stimulation of neighboring brain areas.”

### First successful implants in Germany

Three patients living with Parkinson’s Disease were implanted with the new directional DBS system by Prof Volkmann in cooperation with Prof Cordula Matthies, Head of Functional Neurosurgery at University Clinic Würzburg, in September 2015. “The first implants demonstrated the advantages of the new directional system. We hope results will be similar in the treatment of dystonia. This is currently evaluated in patients living with the disease. In the beginning we tried to simulate an old DBS system using a conventional way of programming but we did not achieve full symptom control and could not lower the side effects. Only when we started using the current steering technology were we able to optimize the therapy for our three patients. They are all doing well now.”



*Image courtesy of Boston Scientific Corporation.*