

The Berlin School of Movement Science (BSMS), graduate school of the Humboldt-Universität zu Berlin, is offering a

## **PhD position with focus on the development of personalised computational models to predict the probability of treatment success in chronic low back pain patients**

for a period of 3 years hosted at the Julius Wolff Institute, Charité-Universitätsmedizin Berlin.

### **Project description**

The aim of this research project is to develop and validate personalised musculoskeletal models (inverse-dynamic models), which can predict the consequences of prospective innovative personalised rehabilitation and training interventions in patients suffering from chronic low back pain. These models should allow therapists to calculate the probability of treatment success based on patient, disease or treatment characteristics. Such models are currently not existing in the rehabilitation but compellingly necessary to predict the success of rehabilitation and training interventions. The successful candidate will measure anthropometric data and kinematics as well as muscle activity profiles of symptomatic and asymptomatic subjects under different tasks. Subsequently, these data should be implemented into inverse-dynamic models in order to individually predict muscle and joint reaction forces.

We are looking for a PhD candidate interested into this topic.

### **Qualifications**

- Candidates should hold an MSc in engineering or a similar degree with an academic level equivalent to the MSc in engineering (Clinical Biomechanics, Biomedical Engineering).
- Experience in programming, advanced mathematics, and a solid background in computational analysis are needed.
- Excellent interpersonal skills and the ability to interact effectively with members of the research teams are essential to the success of the individual in this position. The

successful candidate must be able to learn and work independently, yet collaborate effectively with co-workers.

- Strong experience in the use of a high-level programming language such as MATLAB, C or C++.
- Ability and willingness to mentor junior students.
- Excellent command of English (written and spoken) as well as technical writing.
- Exceptionally strong communication and interpersonal skills.
- Excellent data presentation and visualization skills.
- Ability to effectively present complex results in a clear and concise manner that is accessible to a diverse audience.
- Understanding of biological principles is a plus.
- Enthusiasm for learning more

### **Eligibility**

- With the beginning of the scholarship the Master studies must be completed.
- The latest degree may not date back longer than 6 years.
- At the time of the nomination the candidate may not be in Germany for more than 15 months.
- During the scholarship period, staying abroad is limited to 9 months in total and no longer than 3 months per year.

The position is funded with a DAAD scholarship (Graduate School Scholarship Programme) and it includes:

- Monthly scholarship of 1000.00 €
- Health, accident and liability insurance.
- Funding of a German language course (2, 4 or 6 months).

### **Application procedure**

The application can only be submitted electronically. It should be written in English and must contain the following:

- Letter of motivation
- Detailed curriculum vitae
- Letter of recommendation by two university professors from the home university, issued during the last 2 years
- Copies of certificates or copies of translated documents:
  - o Copy of the school leaving certificate qualifying for admission to higher education in your own country

- Copies of certificates of annual examinations taken at the home university (transcripts of records)
- Copies of certificates of any academic degrees or advanced qualifications showing grades and explain the home's grading system
- Language certificate
- Certificates of internships (when available)
- The master thesis (or equivalent) and any publications or manuscripts

### **Contact information for this position**

We invite you to apply before the **15 November 2016**. Applications must be submitted as one pdf file containing all materials to be given consideration. Please send your application document via email to: w.hampel (at) hu-berlin.de.

The Julius Wolff Institute is within the university structure of the Charité - Universitätsmedizin Berlin. As a research institute we run applications and basic research in the fields of orthopedics and trauma surgery. Our main research field is the regeneration and biomechanics of the musculoskeletal system as well as the improvement of joint replacement. The successful candidate will work under the supervision of Prof. Dr. Hendrik Schmidt ([jwi.charite.de/en/research/spine\\_biomechanics](http://jwi.charite.de/en/research/spine_biomechanics)).