



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 and evaluation of a novel rehabilitation intervention in the presence of neural noise for chronic non-specific low back patients for a period of 3 (4) years hosted at the Department of Training and Movement Sciences of the same university.

Project description

The purpose of the research project is to develop a specific and novel rehabilitation therapy based on a random/irregular functional perturbation training induced by disturbances on the spine that are unpredictable and continuously variable in amplitude and frequency and to apply this therapy in a homogeneous group of chronic non-specific low back pain patients that show neuromuscular control deficits in spine stability.

The modular organisation of muscle activation and the local dynamic trunk stability, which will be the main focus of this project, will be applied for the development and evaluation of the novel intervention. To investigate how the central nervous system organizes and uses specific muscle activation patterns (the so-called muscle synergies) to stabilize the spine, the electromyographic activity of several superficial trunk muscles will be measured and using a non-negative matrix factorization algorithm the muscle synergies will be extracted. The application of the variable and unpredictable disturbances will be realized using a specific device in the anteroposterior and mediolateral axes of the trunk. The amplitude and frequency changes of the disturbances will be controlled electronically.

We are looking for a PhD candidate interested in investigating the neurophysiological aspects underlying human motor control during trunk stabilization in the presence of neural-noise.

Qualifications

- Candidates should hold an MSc or equivalent in Clinical Biomechanics, Biomedical Engineering or Sport Science

- A very good mathematics and physics background, together with direct experience in signal processing are required. Previous work revolving around the concept of muscle synergies will constitute an important reason for preference.
- Strong experience in the use of high-level programming languages such as R, MATLAB, C or C++.
- Very good knowledge of the English language in speaking and writing is required.

Eligibility

- With the beginning of the scholarship the Master or equivalent 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 (see the DAAD form attached)
- 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
 - o Copies of certificates of annual examinations taken at the home university (transcripts of records)
 - o Copies of certificates of any academic degrees or advanced qualifications showing grades and explain the home's grading system

- Certificates of internships (when available)
- The master thesis (or equivalent) and any publications or manuscripts

Contact information for this position

Students' representative of the Berlin School of Movement Science

Alessandro Santuz (alessandro.santuz (at) hu-berlin.de, +49 (0) 30 2093 46253)

We invite you to apply before the **31st October 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 Department of Training and Movement Sciences at the Humboldt-Universität zu Berlin provides basic and applied research in the areas of training and movement sciences as well as biomechanics. Our main research fields include adaptation mechanisms of mechanical and morphological properties of muscles and tendons, plasticity of movement control and interaction between the neuronal and musculoskeletal systems in order to increase human performance and improve life quality. The successful candidate will work under the supervision of Prof. Dr. Adamantios Arampatzis (https://www.spowi.hu-berlin.de/en/institut-en/tbw-en/mitglieder-en/arampatzis-en?set_language=en).

**Gutachten zu Stipendienanträgen von ausländischen Studierenden,
Graduierten, Doktoranden und Promovierten****Reports on scholarship applications
submitted by foreign students, graduates, doctoral students and postdocs****Allgemeine Hinweise**

Das Auswahlverfahren für die Vergabe von DAAD-Stipendien basiert auf dem Prinzip der akademischen Selbstverwaltung. Die Förderentscheidungen im Rahmen der DAAD-Programme werden in der Regel von unabhängigen akademischen Auswahlkommissionen getroffen. Sie nehmen in der Arbeit des DAAD einen zentralen Platz ein. Der DAAD dankt allen, die der Bitte von DAAD-Stipendienbewerbern um ein Gutachten für ihren Antrag entsprechen. Die Gutachten bilden zusammen mit den Leistungsnachweisen und der Beschreibung des Studien- bzw. Forschungsvorhabens durch den Bewerber eine wichtige Entscheidungsgrundlage für die Empfehlung der Auswahlkommission zur Vergabe eines Stipendiums.

General Information

The selection process for awarding DAAD scholarships is based on the principle of academic self-government. Funding decisions for DAAD programmes are generally made by independent academic Selection Committees. These play a central role in the work of the DAAD. The DAAD would like to thank everybody who meets an applicant's request for a report to accompany their DAAD scholarship application. These reports, along with certificates documenting the applicant's academic achievements and the applicant's description of the study or research project, form an important decision-making basis for the Selection Committee's scholarship award recommendation.

Gutachten für / Report for:

(Name der Bewerberin/des Bewerbers / Applicant's name)

Name des Gutachters/der Gutachterin:

Referee's name

Stellung / Position:**Fach / Subject:****Hochschule / University:****Anschrift / Address:**

- 1. Woher und wie lange kennen Sie die Bewerberin / den Bewerber?** Since when and in what capacity have you known the applicant?
- 2. Die Bewerberin/der Bewerber zählt(e) zu den besten Studierenden/Doktoranden (in %):**
The applicant is/was among the best students/doctoral students (in %):
 5% 10% 20% 30% keine Aussage möglich / no assessment possible
- 3. Wodurch zeichnet sich die Bewerberin/der Bewerber fachlich und persönlich aus und wie beurteilen Sie ihr/sein Potential?** How does the applicant stand out in academic and personal terms and how would you assess his/her potential?

4. Wie beurteilen Sie die Vorbereitung, Durchführbarkeit, Relevanz und den Zeitplan des Vorhabens?

How would you assess the preparation, feasibility, relevance and schedule of the project in question?

5. Welche Bedeutung hat das beantragte Stipendium für den wissenschaftlichen und beruflichen Werdegang der Bewerberin/des Bewerbers und/oder ihre/seine Heimatinstitution? Of what significance is the aspired scholarship to the applicant's academic and professional career and/or to his/her home institution?

6. Zusätzliche Informationen, die für die Entscheidung über das Stipendium von Bedeutung sein könnten / Additional information that could be of importance to the scholarship award decision:

7. Befürwortung / Degree of approval

Befürwortung mit Nachdruck
Emphatic approval

Befürwortung
Approval

Befürwortung mit Einschränkung
Conditional approval

Ort, Datum
Place, Date

Unterschrift des Gutachters/der Gutachterin, Stempel
Referee's Signature, Stamp or Seal