

## Trial Description

### Title

**Influence of a perturbation training on the neuro-mechanical connection between the trunk and the knee during lateral movement**

### Trial Acronym

**LatBew-Training**

### URL of the trial

**[---]\***

### Brief Summary in Lay Language

**The knee injury risk is higher when performing lateral movements as typically encountered during soccer or handball games. Females are at a 2- 8- fold higher risk to sustain an knee injury than males. One of the reason for that higher risk is the difference in knee joint biomechanics. However, the way the trunk is controlled seems also to play a important role.**

**It has been reported in few studies higher trunk lateral flexion and rotation for females than males.**

**Moreover, perturbations during the landing phase of lateral movement require a higher neuromuscular control of the the whole body and especially of the trunk. Such a training design would therefore stimulate the control of the knee joint and the trunk and possibly reduces the injury risk.**

**The aim of the study is to investigate the influence of such a perturbation training on the control of the knee and trunk and if the coupling between these two segments could be improved**

### Brief Summary in Scientific Language

**The knee injury risk is higher when performing lateral movements as typically encountered during soccer or handball games. Females are at a 2- 8- fold higher risk to sustain an knee injury than males. The neuromechanical coupling between the trunk and knee joint plays a important role, especially be females who demonstrate higher knee valgus position and higher trunk abduction.**

**Moreover, perturbations during the landing phase of lateral movement require a higher neuromuscular control of the the whole body and especially of the trunk. Such a training design would therefore stimulate the control of the knee joint and the trunk and possibly reduces the injury risk.**

**The aim of the study is to investigate the influence of such a perturbation training on the control of the knee and trunk and if the coupling between these two segments could be improved**

**The improvement of the control of the trunk and knee joint after a training based on perturbation during lateral reactive jumps will be compared to the results obtained after a classical plyometric training. Kinematical data of the trunk (flexion, rotation, lateral flexion of the trunk with respect to the pelvis segment) will provide information about the control of the trunk. Knee joint moment values as well as electromyography data will give some insight in the control of the knee joint.**



## Organizational Data

- DRKS-ID: **DRKS00004582**
- Date of Registration in DRKS: **2012/12/20**
- Date of Registration in Partner Registry or other Primary Registry: [---]\*
- Investigator Sponsored/Initiated Trial (IST/IIT): **yes**
- Ethics Approval/Approval of the Ethics Committee: **Approved**
- (leading) Ethics Committee Nr.: **474/12 , Ethik-Kommission der Albert-Ludwigs-Universität Freiburg**

## Secondary IDs

- Universal Trial Number (UTN): **U1111-1138-2815**

## Health condition or Problem studied

- Free text: **healthy participants**

## Interventions/Observational Groups

- Arm 1: **Arm 1: Training group A, healthy athletes practicing team sports will ball would be tested using stereophotogrammetry and electromyography methods. The perturbation training consists in performing lateral reactive jumps while landing will be perturbed and would take place 3x a week for 30min during 5 weeks.**
- Arm 2: **Arm 2: Training group B, healthy athletes practicing team sports will ball would be tested using stereophotogrammetry and electromyography methods. The plyometric training (control group) would take place 3x a week for 30min during 5 weeks.**

## Characteristics

- Study Type: **Interventional**
- Study Type Non-Interventional: [---]\*
- Allocation: **Randomized controlled trial**
- Blinding: **Open (masking not used)**
- Who is blinded: [---]\*
- Control: **Active control**
- Purpose: **Basic research/physiological study**
- Assignment: **Parallel**



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Control: **Active control**

Purpose: **Basic research/physiological study**

Assignment: **Parallel**

■ Phase: **N/A**

■ Off-label use (Zulassungsüberschreitende Anwendung eines Arzneimittels): **N/A**

### Primary Outcome

**The improvement of the control of the trunk and knee joint after a training based on perturbation during lateral reactive jumps will be compared to the results obtained after a classical plyometric training. Kinematical data of the trunk (flexion, rotation, lateral flexion of the trunk with respect to the pelvis segment) will provide information about the control of the trunk. Knee joint moment values as well as electromyography data will give some insight in the control of the knee joint.**

**The dependant variables will be measured first before the start of the training and then after 5 weeks.**

### Secondary Outcome

**[---]\***

### Countries of recruitment

■ DE **Germany**

### Locations of Recruitment

■ other **Universität, Freiburg im Breisgau**

### Recruitment

■ Planned/Actual: **Planned**

■ (Anticipated or Actual) Date of First Enrollment: **2013/01/14**

■ Target Sample Size: **30**

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(Anticipated or Actual) Date of First Enrollment: **2013/01/14**

Target Sample Size: **30**

- Monocenter/Multicenter trial: **Monocenter trial**
- National/International: **National**

### Inclusion Criteria

- Gender: **Female**
- Minimum Age: **18 Years**
- Maximum Age: **35 Years**

### Additional Inclusion Criteria

**Healthy people playing soccer, basketball or handball with no previous neurological irregularities or injuries of the lower extremity. No experience with perturbation training.**

### Exclusion criteria

**Neurological or orthopaedic diseases, chronic diseases, concurrent participation in other studies, experience with perturbation training.**

### Addresses

- **Primary Sponsor**

**Institut für Sport und Sportwissenschaft der Albert-Ludwigs-Universität  
Freiburg**

**Mr. Prof. Dr. Albert Gollhofer  
Schwarzwaldstraße 175  
79117 Freiburg  
Germany**

Telephone: **+49 761 203-4510**

Fax: **+49 761 203-4534**

E-mail: **albert.gollhofer at sport.uni-freiburg.de**

URL: [---]\*

- **Contact for Scientific Queries**

**Institut für Sport und Sportwissenschaft der Albert-Ludwigs-Universität  
Freiburg  
Mr. Dr. Guillaume Mornieux**



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**Institut für Sport und Sportwissenschaft der Albert-Ludwigs-Universität  
Freiburg  
Mr. Dr. Guillaume Mornieux  
Schwarzwaldstraße 175  
79117 Freiburg  
Germany**

Telephone: **+49 761 203-4521**

Fax: **+49 761 203-4534**

E-mail: **guillaume.mornieux at sport.uni-freiburg.de**

URL: [---]\*

### ■ Contact for Public Queries

**Institut für Sport und Sportwissenschaft der Albert-Ludwigs-Universität  
Freiburg  
Mr. Dr. Guillaume Mornieux  
Schwarzwaldstraße 175  
79117 Freiburg  
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Fax: **+49 761 203-4534**

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## Sources of Monetary or Material Support

### ■ Institutional budget, no external funding (budget of sponsor/PI)

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## Status

■ Recruitment Status: **Recruiting planned**

■ Study Closing (LPLV): [---]\*

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## Trial Publications, Results and other documents

\* *This entry means the parameter is not applicable or has not been set.*

\*\*\* *This entry means that data is not displayed due to insufficient data privacy clearing.*