




**TRAMA** *TRAINING in  
Motion Analysis*



Start up meeting  
TRAMA Project  
May 11th 2007




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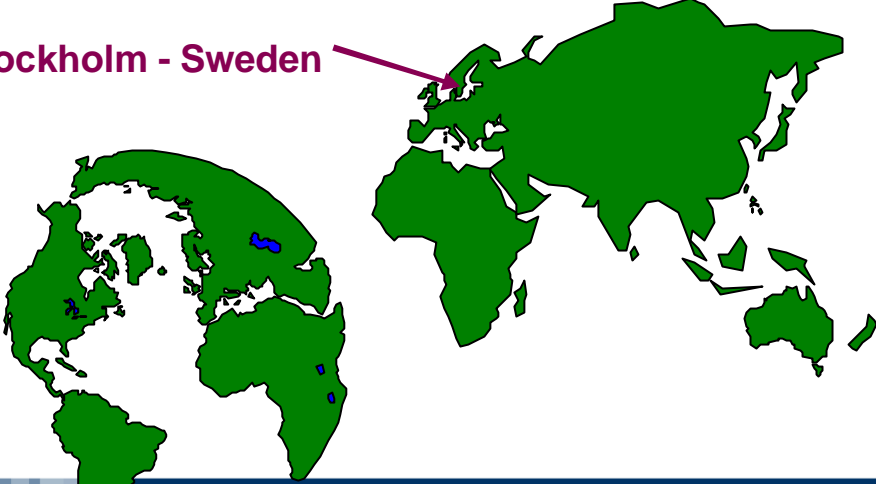
**Karolinska  
Institutet**


a medical university  
dedicated to improving people's  
health through higher education,  
research and information

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**Stockholm - Sweden** 

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Active gene  
© Beqil Daneshjoti

## Research and teaching from molecule to patient




- at 22 departments
- in 600 research units
- including 1 433 senior researchers/teachers
- 2 147 postgraduate students
- 5 904 undergraduate students (full time equivalents)



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## Karolinska Institutet & the hospitals

Hospital Clinic	KI Department
Head of Clinic	Professor
Grants for clinical research	Grants from different sources for research and higher education

**Clinical research and training**

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## Department of Neurobiology, Care Science and Society Division of Physiotherapy



**Huddinge**

*Motor Control Lab*

- 12 Divisions
- 3 586 Full time equivalent KI-students
- 620 MSEK for research
- 1 210 KI-employees (full time)

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 **Motor Control and Physical Therapy Research Lab.** 

a movement research and motor control teaching laboratory





2 digital video cameras

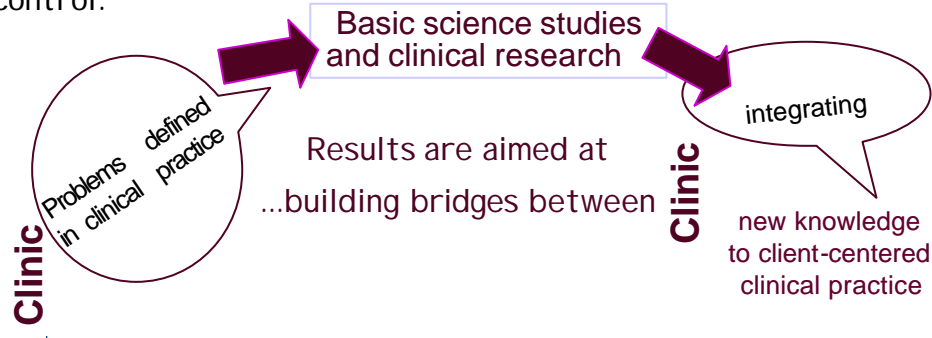
Elite 2000 (8 camera-system)  
2 Kistler force plates  
4 AMTI Force plates  
2 setup 8 channel EMG

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 **Our research program** 

investigates how the CNS controls the coordination between posture, equilibrium and movement in every day motor tasks in children, adults and elderly with normal or impaired motor control.



**Clinic** Problems defined in clinical practice


Basic science studies and clinical research

Results are aimed at ...building bridges between

**Clinic** integrating

new knowledge to client-centered clinical practice

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## Research group



H. Hirschfeld (Assoc. Prof) – Every day motor tasks, CP, Stroke, Parkinson, Elderly

M. Henriksson (PhD, PT) – ACL, Dizziness

E. Jonsson (PhD, PT) – evaluation of clinical balanstests, elderly

K. Jesinkey (PhD student) CP sit-to-stand,

A. Edenhammer (PhD student) CP, standing shell, rising from floor

G. Elmgren (PhD student ) Stroke

AC Åberg postdoc Elderly, fear of falling (Uppsala Univ.)

P. Tsaklis postdoc (Greece) Stroke

Ingrid Claesson MSc, PT./ MSC-students projects, BSc-student projects

Following some examples ....

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**Hypothesis:** Compensating for impaired posture with a standing shell

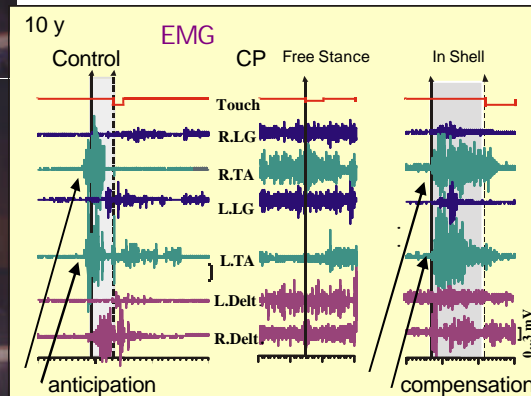
will improve postural adjustments and reaching .



Clinical consequence of results: task oriented training in free stance does not promote task specific integration between posture and movement. Motor learning of task performance in association with postural orientation necessary.

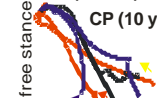
[Edenhammer thesis \(2004-2008\)](#)

Postural adjustments

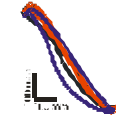


### Kinematics

Hand trajectory  
(5 trials)  
CP (10 y)



Control 10 y



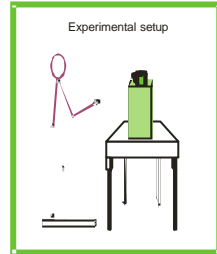


## Effect of DAFO on anticipatory postural adjustments



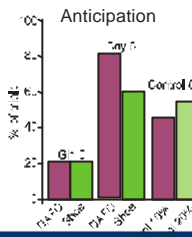
**Question:**  
Do children with CP display anticipation?

### Comparison between shoe and DAFO in a reaching task.



Jesinkey, Näslund  
3 papers 2003-2007

CoP analysis



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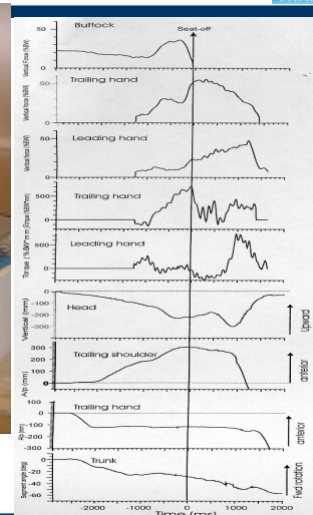
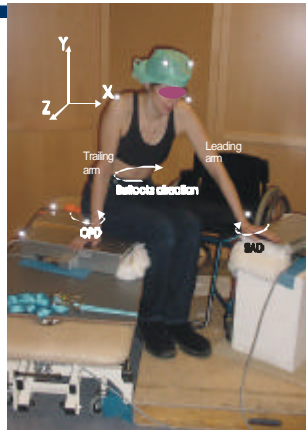
## Analysis of a sitting transfer in subjects with SCI



Kinematics  
and  
GRF-patterns

Butler and Granström  
MSc thesis, 2003

Paper: Butler et al 2006



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**Clinical vs experimental measures Functional Reach Test?**

Clinically regarded as measure of stability limits.

**Results:**  
Reach distance more influenced by trunk and ankle movement, than CoP displacement!  
A/P displacement of CoP

E. Jonsson PhD Thesis 2006 (4 papers)

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**Alteration of the gait initiation process in elderly**

anticipation

**Predictors for impaired balance?**

Emg and GRF analysis

M. Henriksson (postdoc work) 2002-2004

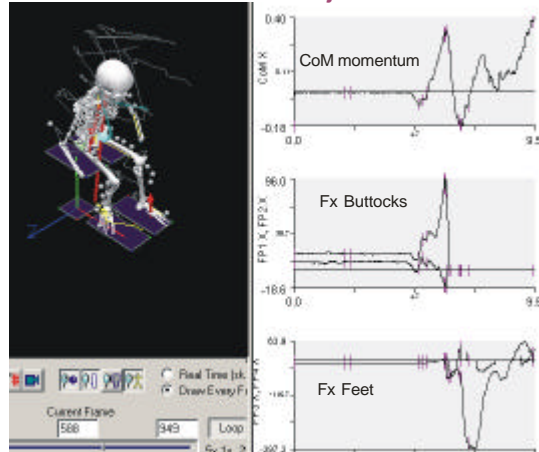
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## Sit-to-walk task in subjects with stroke

G. Elmgren  
PhD thesis  
2005 – 2009  
(4 papers)



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## Understanding movement analysis and building bridges to clinical praxis.



Öresunds bridge

Don't be put off by apparent difficulties – if you really try for any objective in life, you may find that everything is simpler than you thought. On the other hand, if you want to go for the top, or become an expert, you may find that everything is more complex than you thought,

**but by then you will have a good grounding in the basics!!!**

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