



Second Course "Motion Analysis and clinics:
why set up a Motion Analysis Lab ?"

TRAMA Project

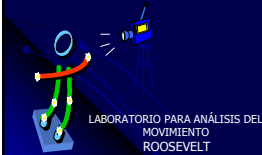
January 14 - 17th 2008



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- Instituto de Ortopedia Infantil Roosevelt
Bogotá, Colombia



Computerized Motion Analysis
at Roosevelt Institute for Pediatric
Orthopaedics



Beginning:



CP and Gait Course in Bogotá, Colombia(1992)





▪ **PROBLEM:** Precise, objective diagnosis, because of lack of technology.

▪ **OPPORTUNITY:** The same lack of technology in the country.



What benefits does computerized gait analysis gives us at IOIR?

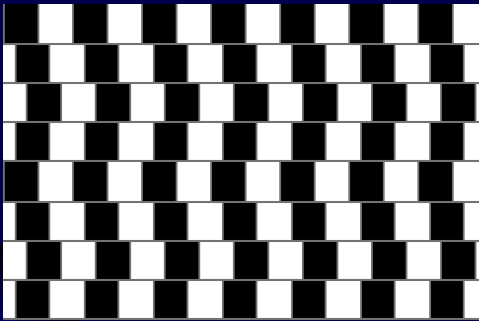


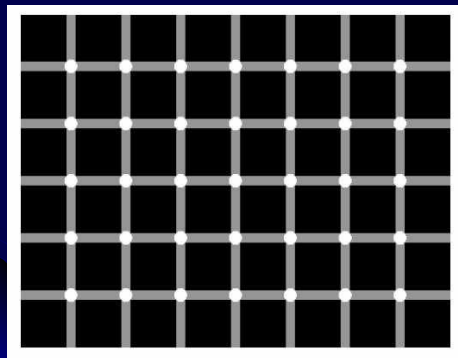
Understanding abnormal gait escapes human vision:

- ♦ Human eye receives up to 1/16 seg.
- ♦ Registers an image at a time.
- ♦ Doesn't discriminate between primary and secondary problems.

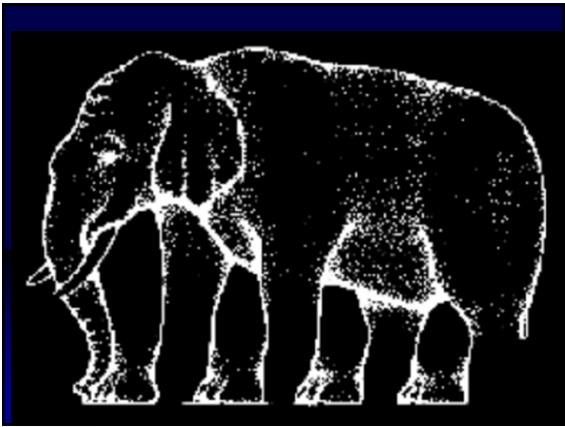


Perception may differ from reality.





Intra and interobserver concordance



Graphics:

- Improve concordance
- Allow comparisons to be made.




Compare

Gait Analysis Clinic:

- Analog video
- Interpretation
- Therapeutic plan




1994 - 2000



Biomedical Engineering Group
Universidad de los Andes

ROOSEVELT
INSTITUTO DE
ORTOPEDIA INFANTIL

1999: technological development project presented to Colciencias, searching for funding.



Financial support

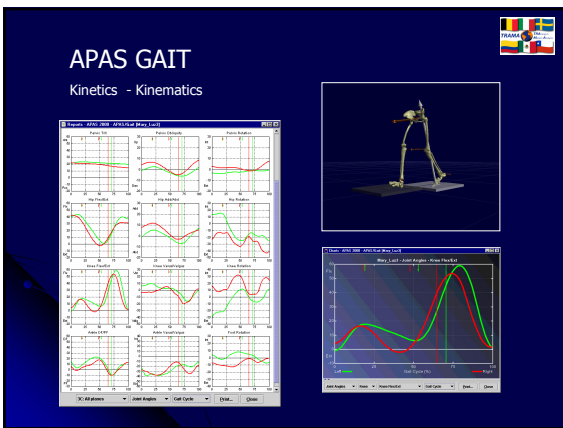
- Colciencias
- Instituto Roosevelt
- Universidad de los Andes

June 2001:

APAS GAIT®
Kinetics - Kinematics








- ### Gait Analysis at IOIR
- Physical exam
 - Clinical data assembly
 - Video - sagittal and coronal planes
 - Kinematics and Kinetics
 - Podobarography
 - Energy consumption index
 - Interpretation and analysis

Physical examination



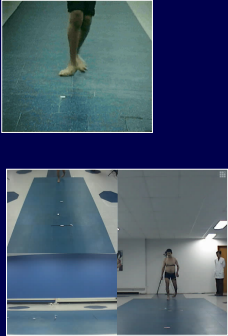
- Standardized
- Data base record

Clinical Data



- Clinical history
- Standardized interrogation
- Functional scales

Video





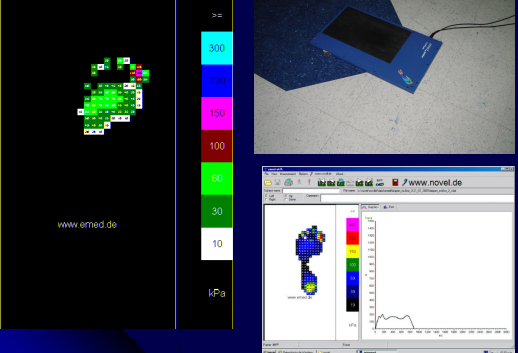

- Sagital plane
- Coronal plane
- Oblique plane

Passive markers



Energy consumption index


$$\frac{HR(f) - HR(r)}{\text{Gait speed}(m/s)}$$




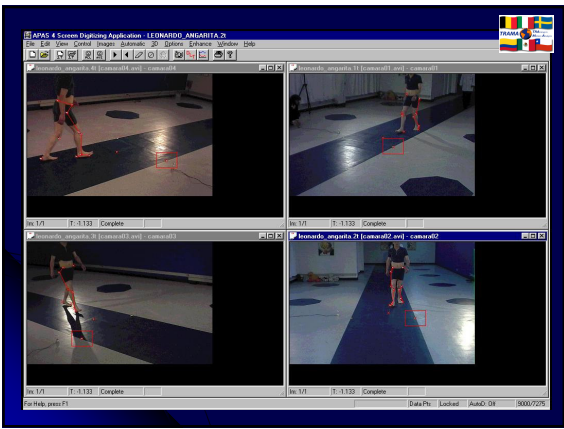
www.emed.de

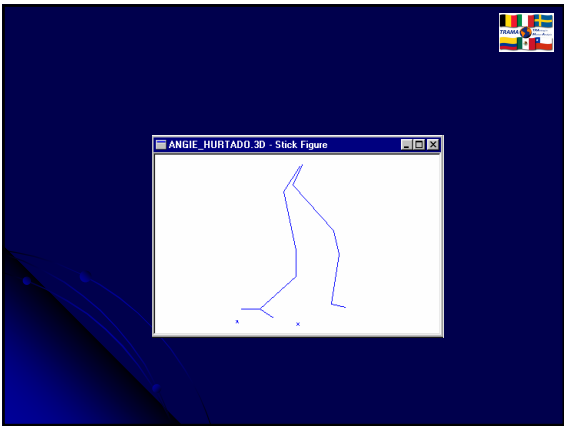
kPa

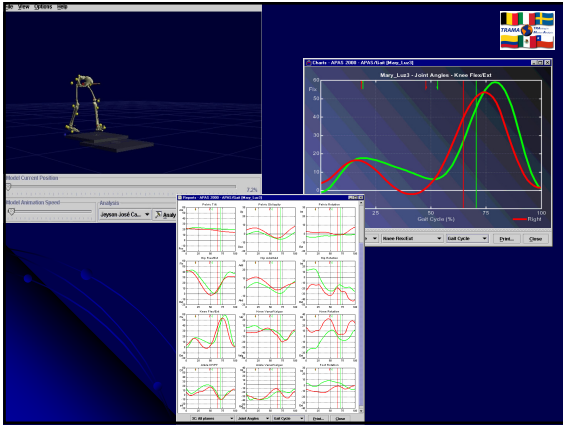
300
250
150
100
60
30
10











Interpretation and Analysis

What benefits does computerized gait analysis gives us at IOIR?



Medical Usefulness:

- Clinical area
 - Diagnosis
 - Follow up
- Investigation area



Diagnosis and follow up:

Understanding the problem



Correct solutions





DOING NO HARM !


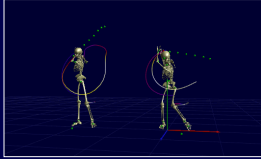


Investigation:

- ❖ CP treatment outcome
- ❖ Talo-navicular arthrodesis
- ❖ Patellar descent
- ❖ Functional scale validation

UPPER EXTREMITY PROTOCOL

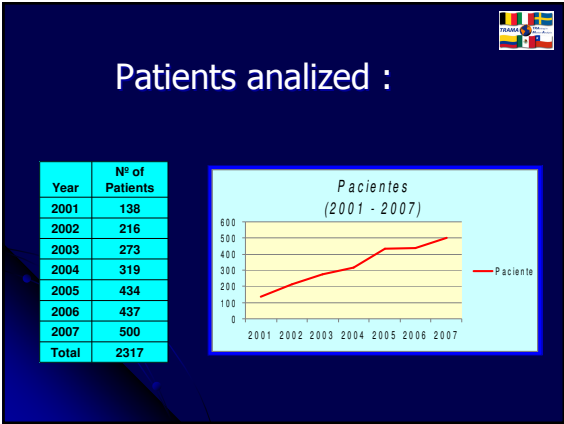


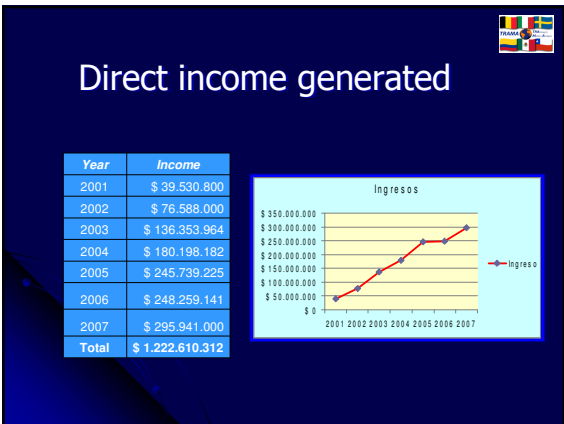


Institutional benefits :

- National and international recognition.
 - Participation in scientific events.
 - Investigation
- Direct and indirect service provider.

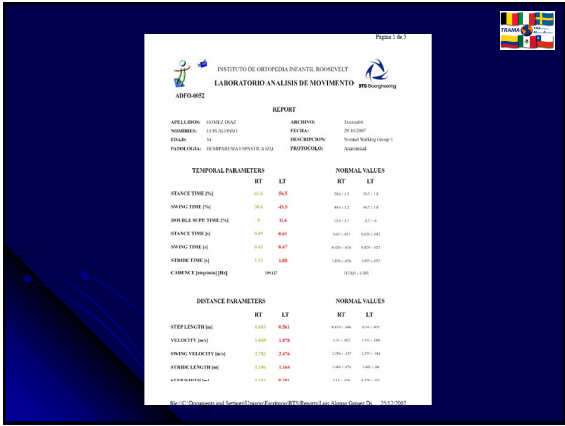


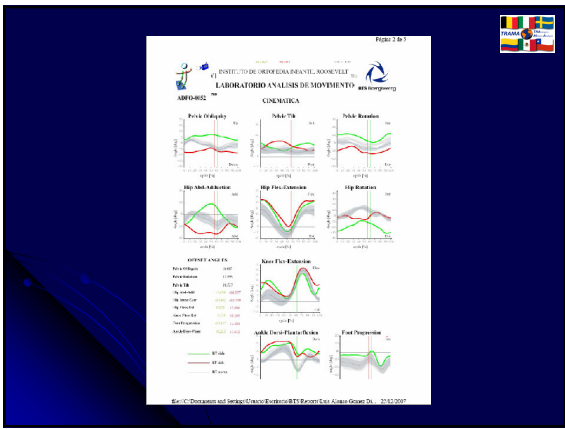


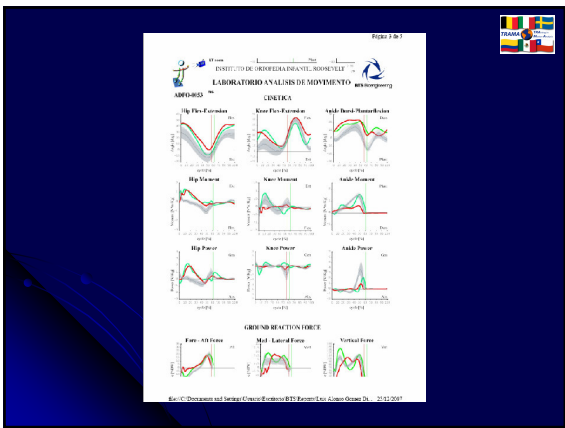


Since November 2007:

BTS Elite System
"Smart" application









Divulgation


- Scientific activity
- Communication media
- Support for underdeveloped communities.


COLOMBIA





ECUADOR











LABORATORIO PARA ANÁLISIS DEL
MOVIMIENTO
ROOSEVELT



The greatest benefit...





LABORATORIO PARA ANÁLISIS DEL MOVIMIENTO ROOSEVELT

TRAMA TRAINING in Motion Analysis

GRACIAS
