

POLITECNICO DI MILANO

QUANTITATIVE ANALYSIS OF POSTURE IN CHILDREN, TEENAGERS AND ADULTS WITH DOWN SYNDROME

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AIMS

Postural and motor analysis through the definition and computation of posture (kinematic, analysis in frequency and time domain) and gait indexes

The needing to know how the consequences of Down Syndrome act on motor system

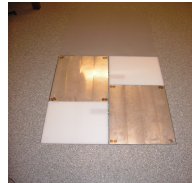
Temporal evolution of typical functional limits in DS in relation to growth

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MATERIALS AND METHODS: INSTRUMENTATIONS



8 (12; 6) TVC
1 (2; 2) Force plate

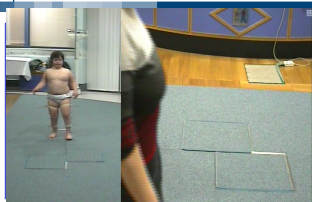
2 VideoController

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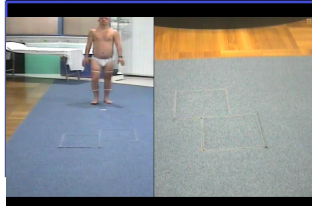
MATERIALS AND METHODS: SUBJECTS



51 children
6-11 years



71 teenagers
11-19 years



60 adults
20-40 years

GROWTH



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MATERIALS AND METHODS: DATA ACQUISITION

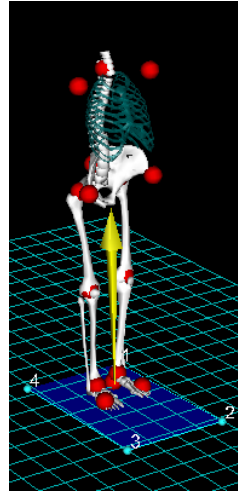
POSTURE TRIALS

22 markers (Davis protocol)

30 s

2 conditions: OE and CE

Resting time: 120 s



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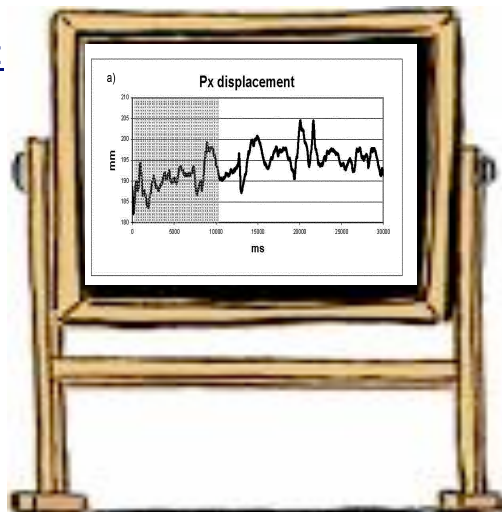
MATERIALS AND METHODS: DATA ELABORATION

Time domain analysis:

ROM Px (mm)

ROM Py (mm)

TL (mm)



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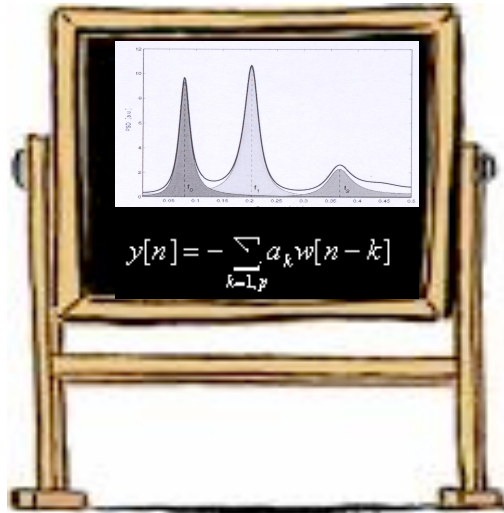


MATERIALS AND METHODS: DATA ELABORATION

Frequency domain analysis:

fPx (Hz)

fPy (Hz)

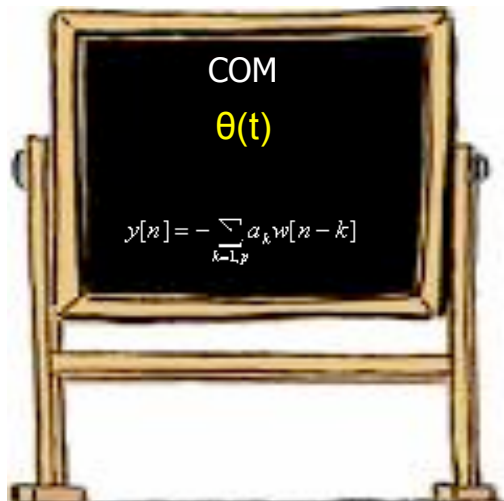
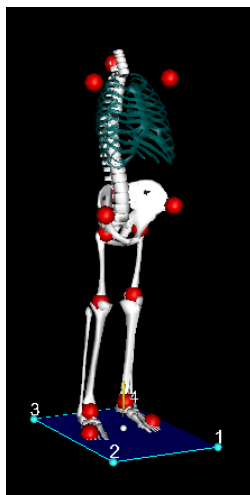


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MATERIALS AND METHODS: DATA ELABORATION

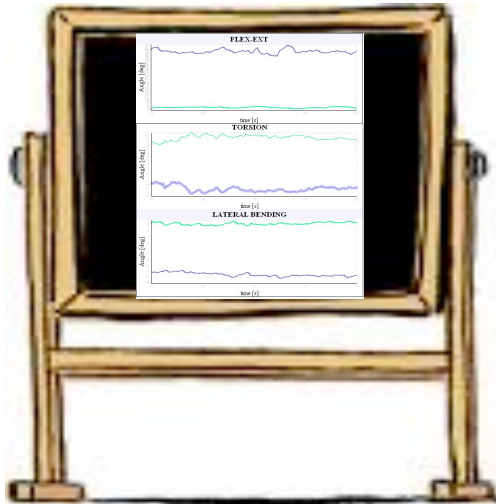
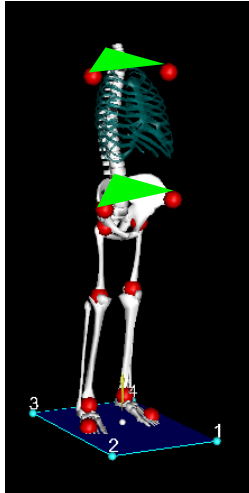


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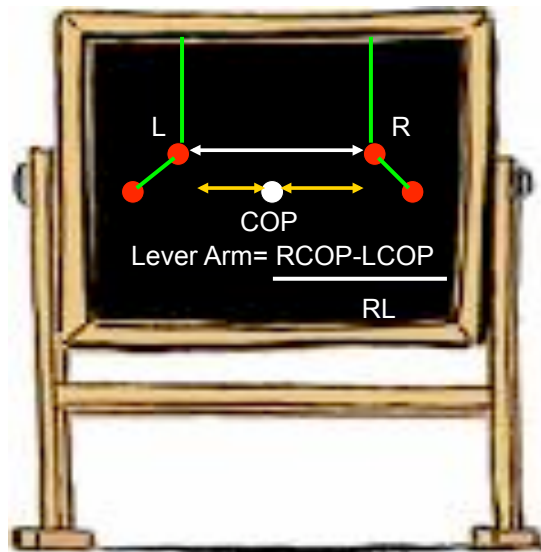
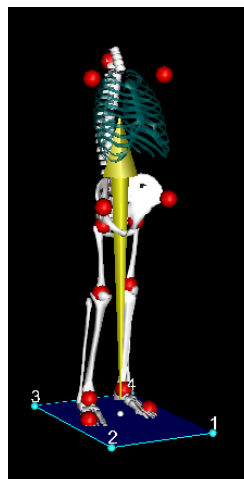


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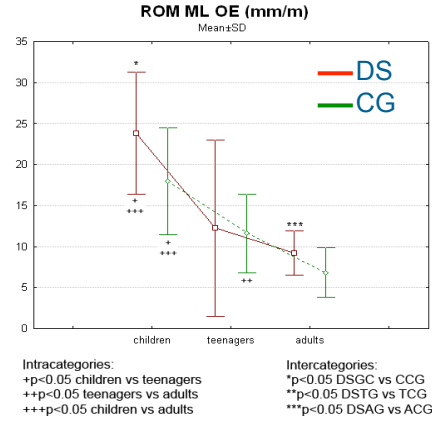
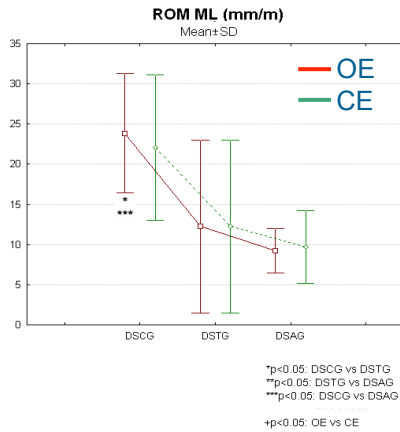


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RESULTS: POSTURE ANALYSIS



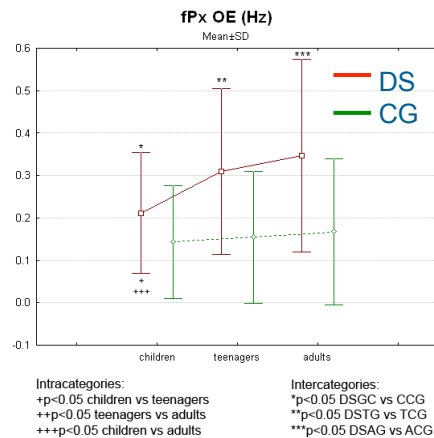
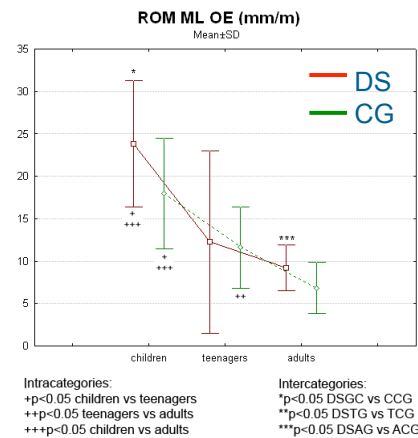
Differences between DS and CG: learning delay
Postural strategies in ML direction improve during growth

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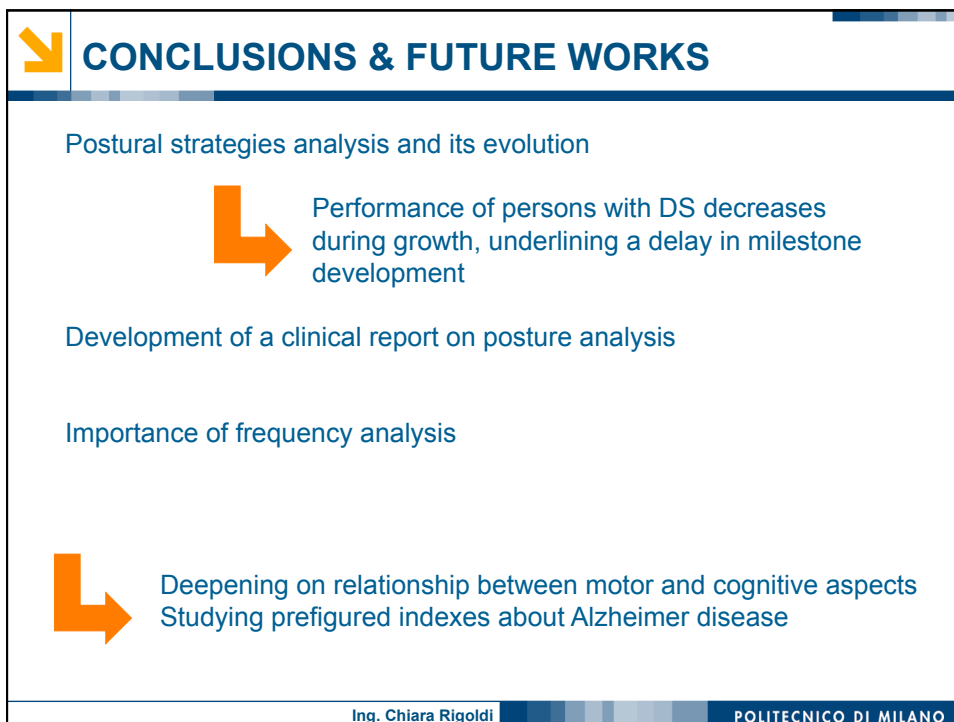
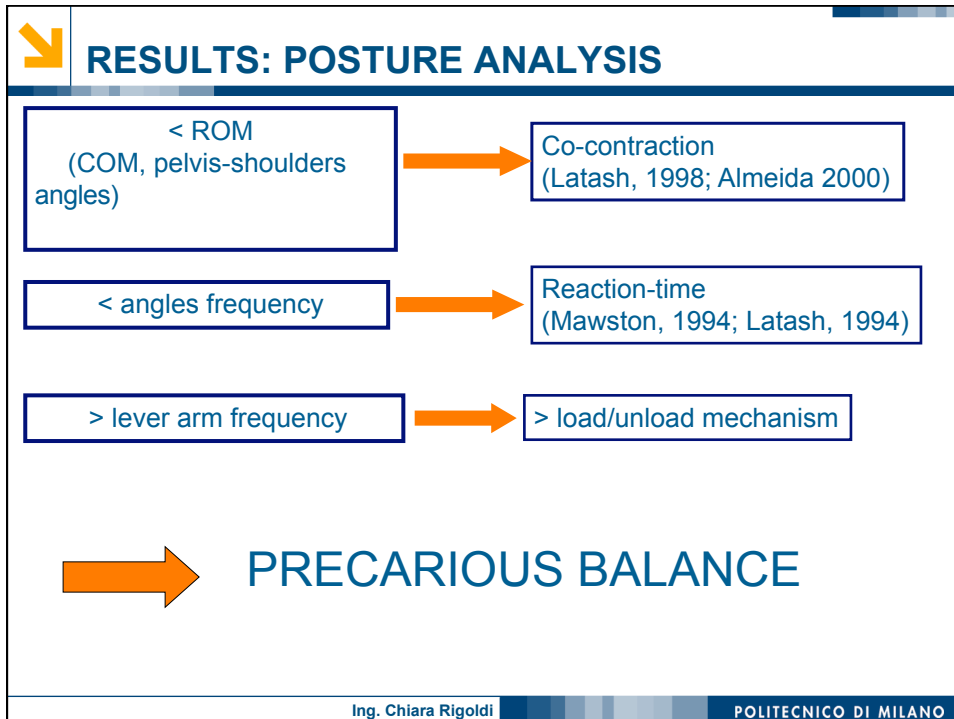


RESULTS: POSTURE ANALYSIS



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COLLABORATIONS

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- Eng. Robert Freedland

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⇒ *"La Sapienza" University, Rome*

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- MD A. Raimondo, psychiatrist