

***Influence of an Eccentric  
Load Placed at the Back  
of the Head on  
Head-Neck Positioning***

*Antonio Pedotti, Esteban Pavan, Carlo Frigo*

*Laboratorio di Tecnologie Biomediche - Politecnico di Milano*



## Method

Group A (n=10, aged  $28.9 \pm 12.1$  yrs) Asymptomatic subjects

Group B (n=10, aged  $39.6 \pm 18.4$  yrs) subjects that had experienced mild, occasional neck pain

Head movements were acquired during four consecutive trials, lasting 5 min each:

- no load applied,
- wearing the loading cap,
- wearing the cap after walking for 5 min,
- no weight applied after having had the loading cap applied for 15 minutes.



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# Model

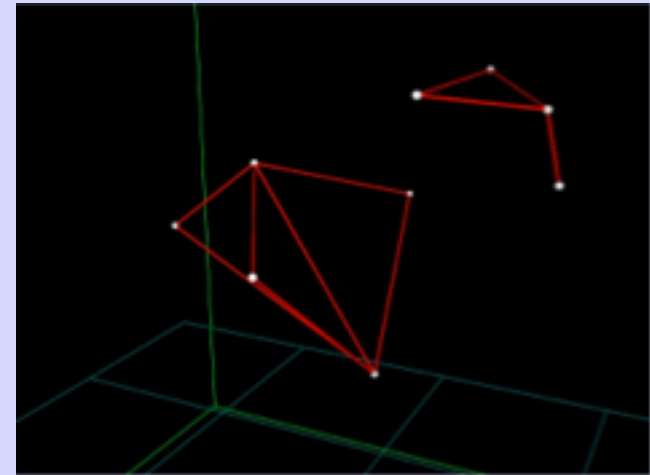
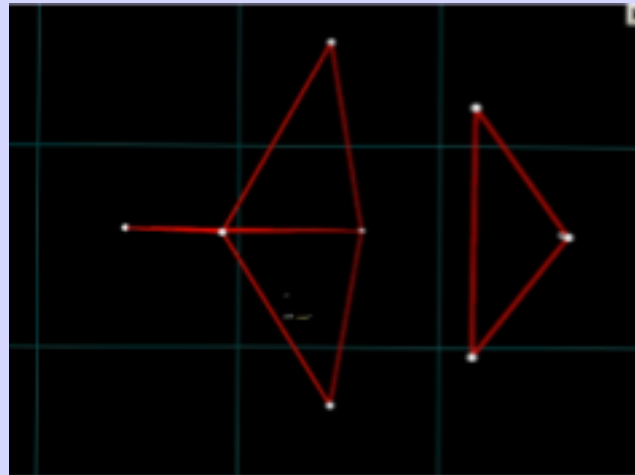
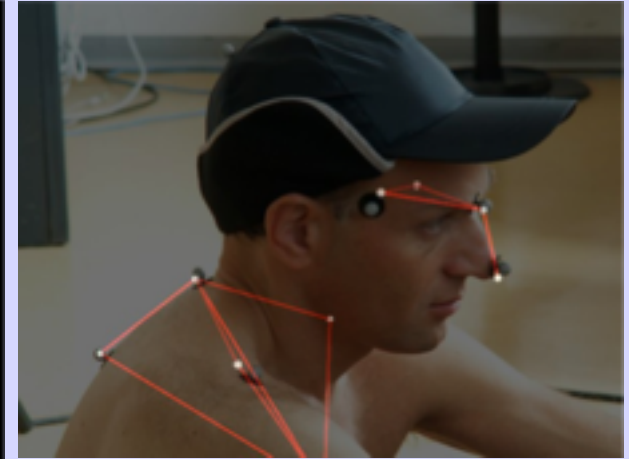
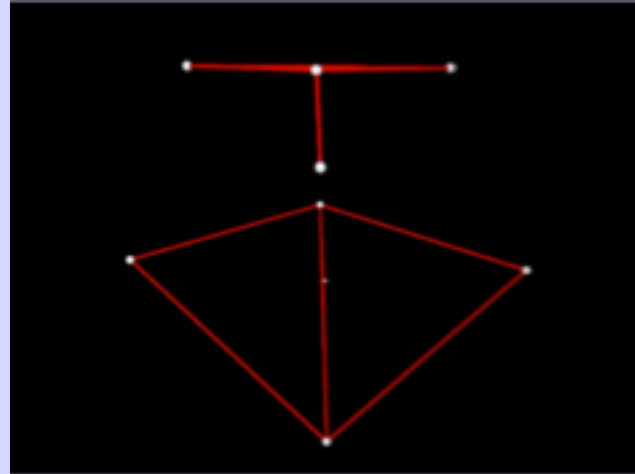


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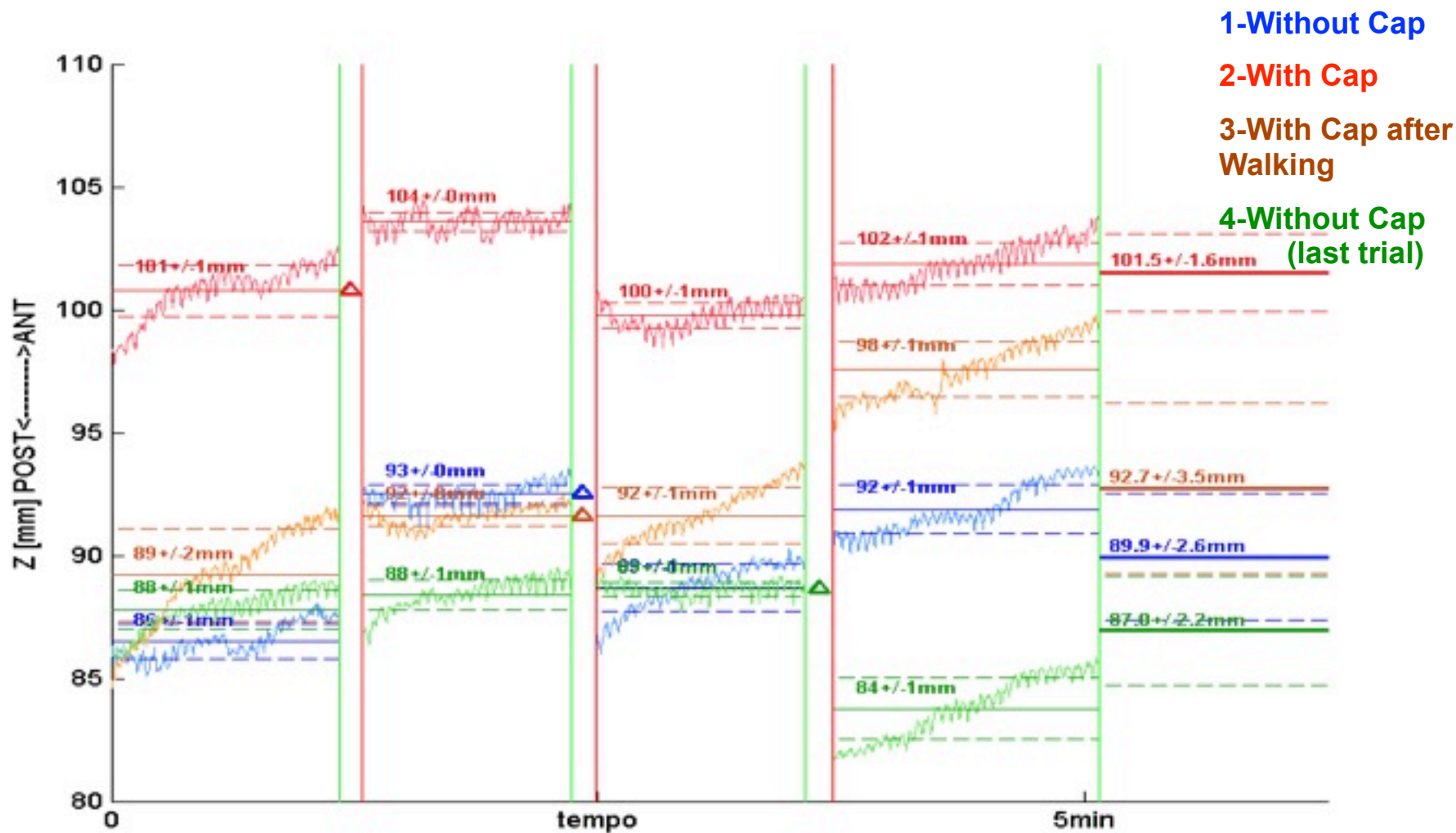


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# Results

## Anterior Head Movement, example

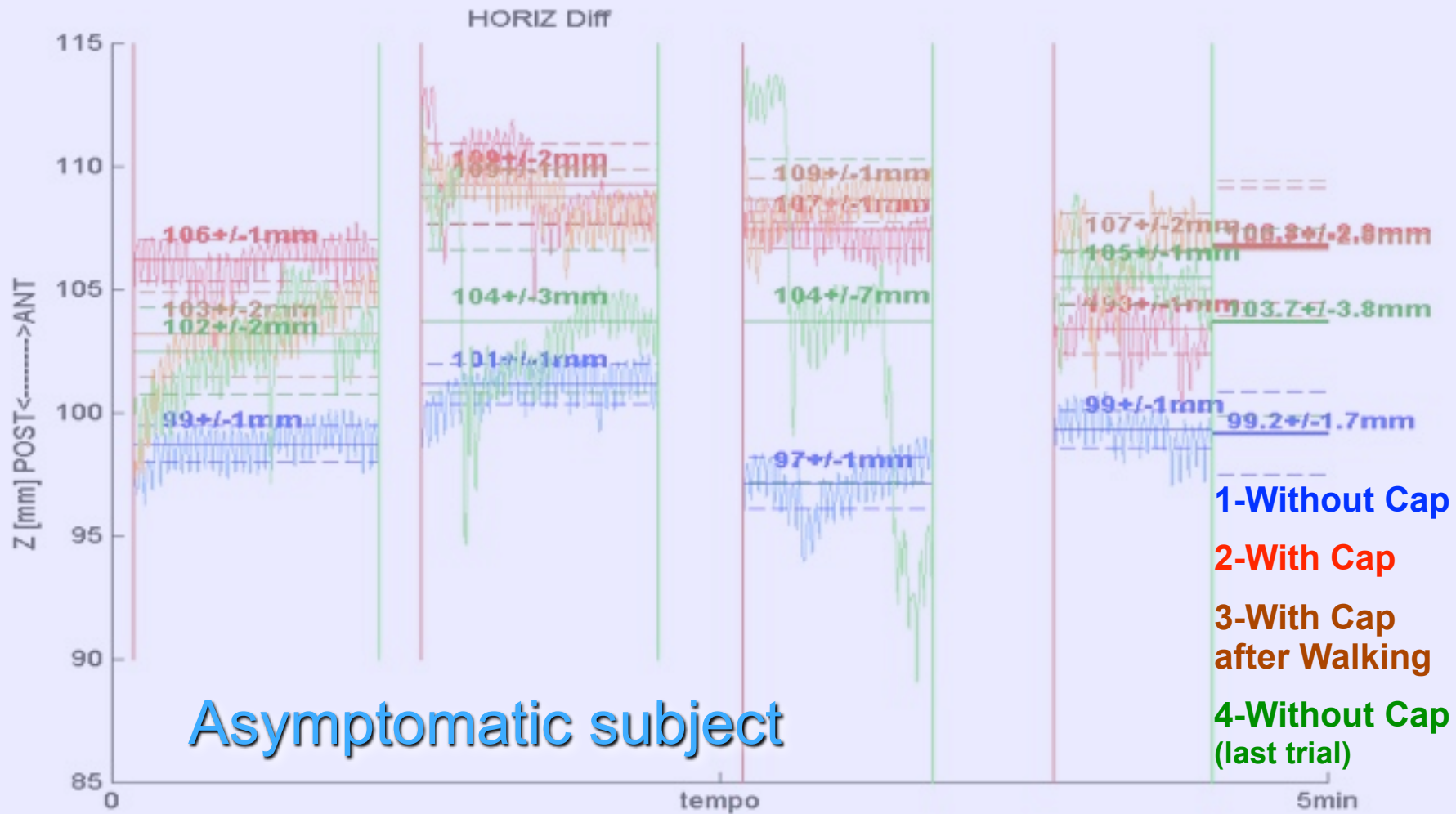


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# Results

## Anterior Head Movement



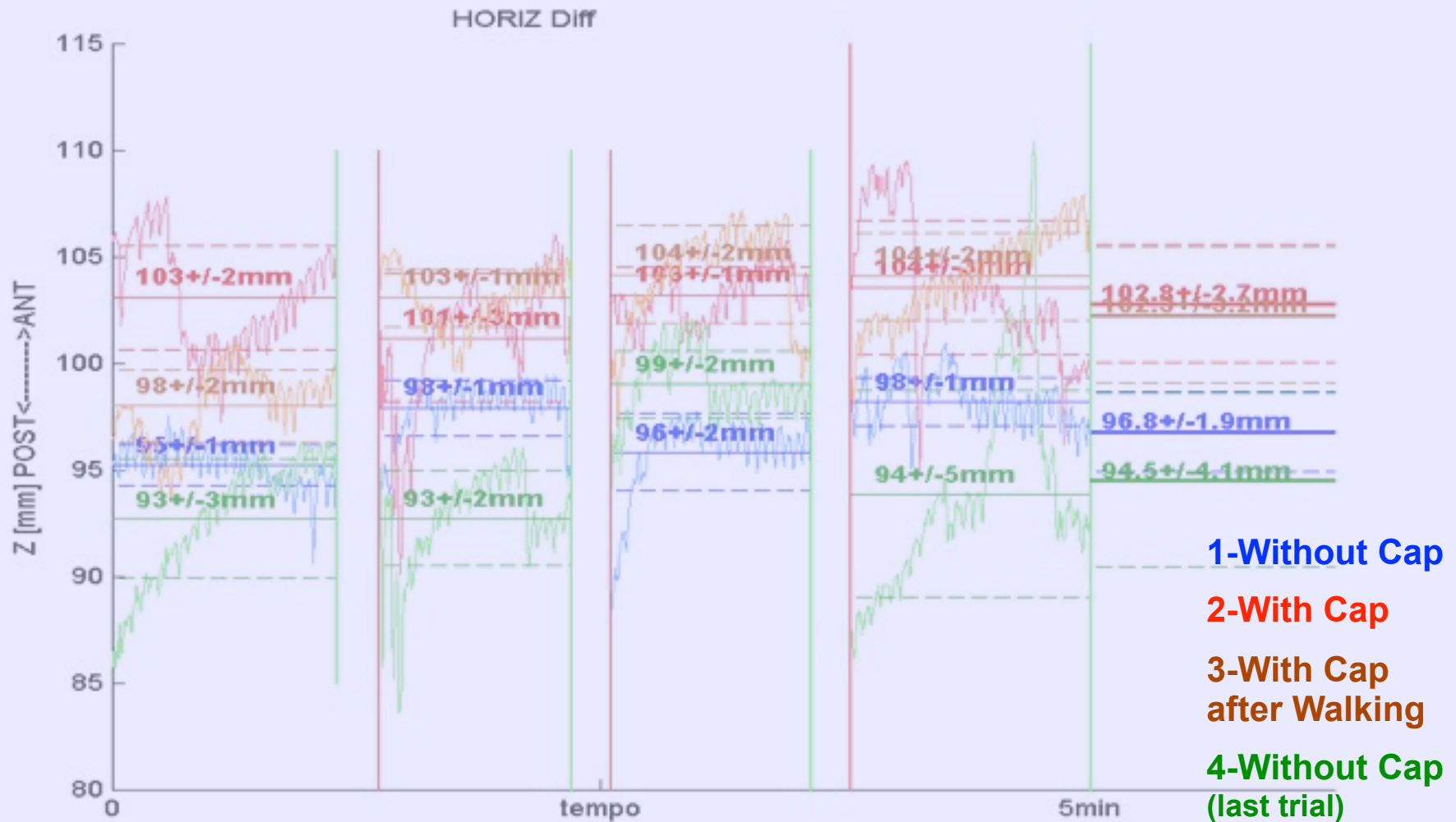
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# Results

## Anterior Head Movement

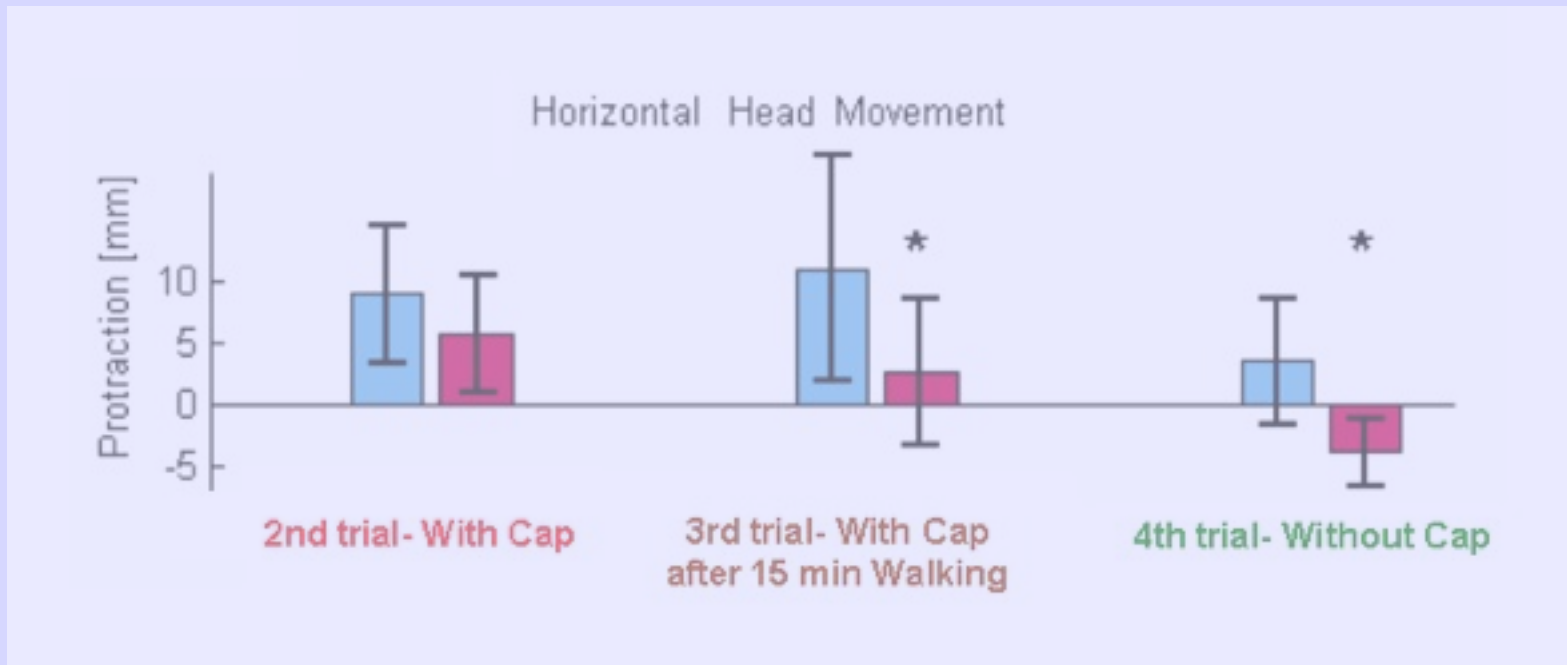


## Occasional Neck Pain Subject

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# Asymptomatic Group vs Occasional Neck Pain Group

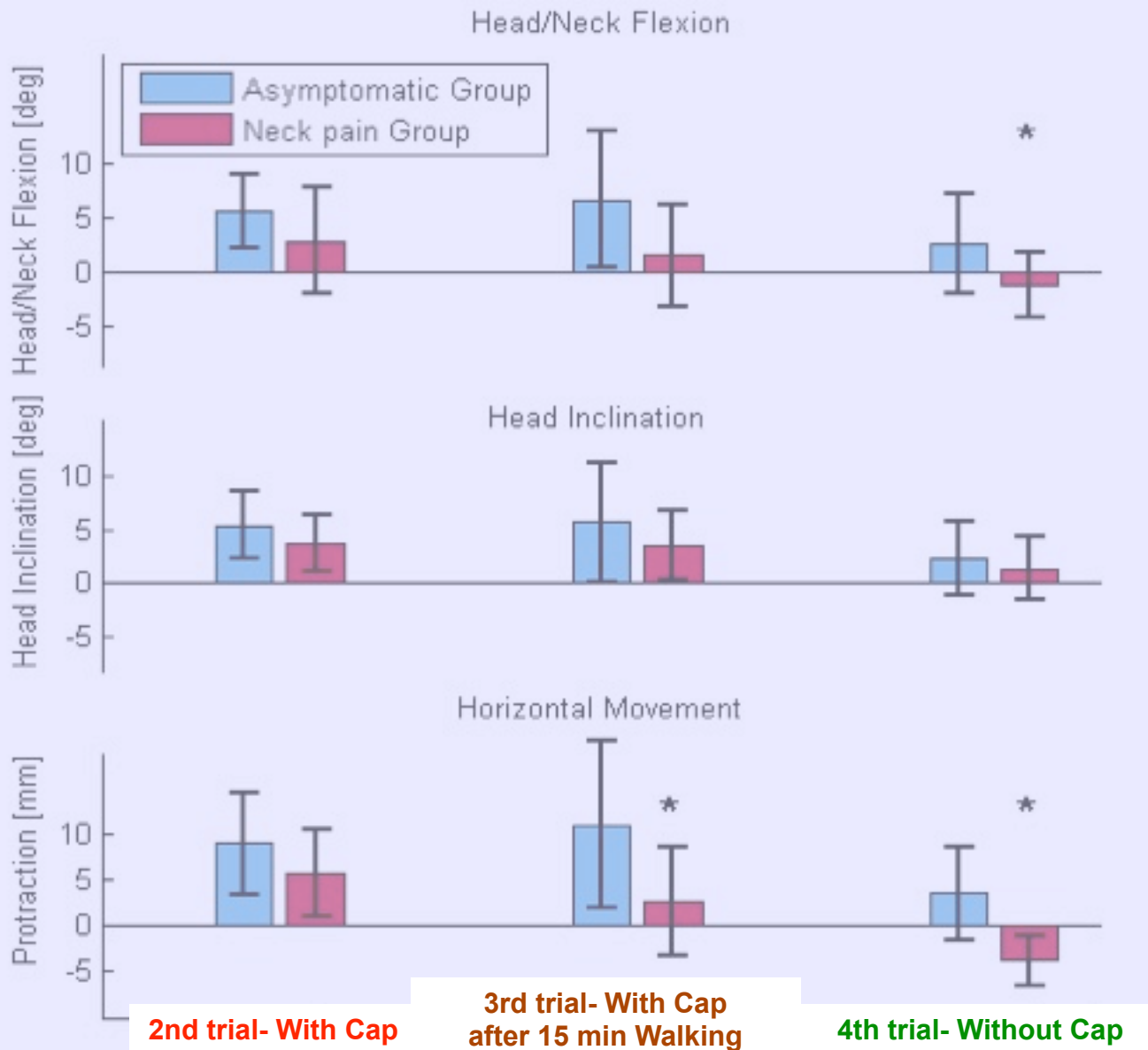


**Results for the two trials with Cap and for the last trial, after removing the cap**  
(values are relative to the initial trial Without Cap)

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# Preliminary conclusions

- **With the cap, all subjects, despite the forward compensating protraction of the head, decrease the load of the neck extensor muscles;**
- **Such a decrease is more pronounced in symptomatic subjects, particularly after the first period of adaptation;**
- **After removing the cap, the symptomatic subjects show a more retracted head position, keeping a decreasing load on neck extensor muscles.**