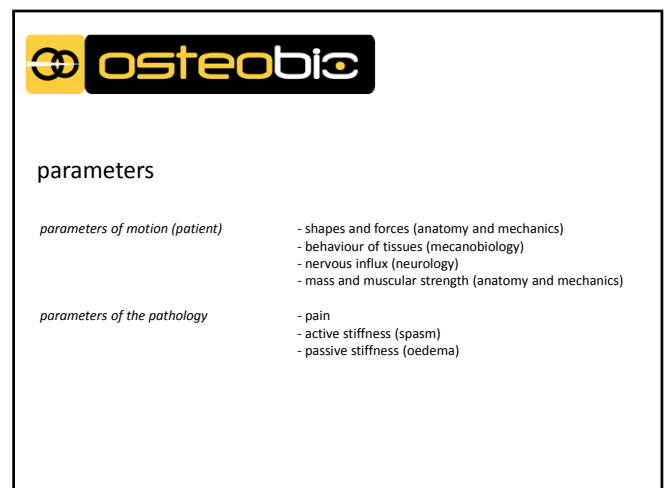
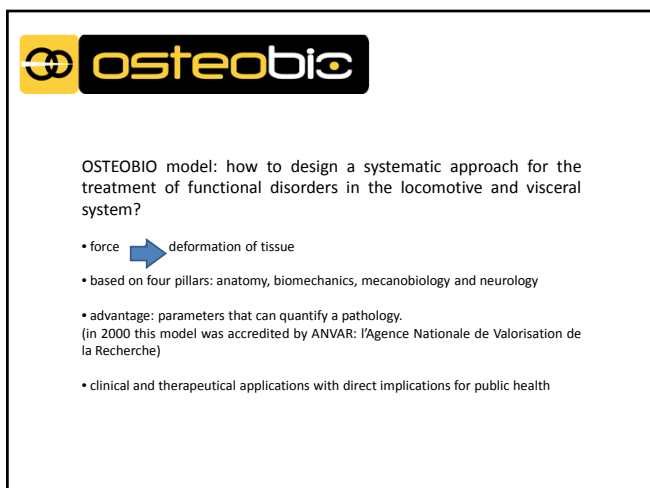
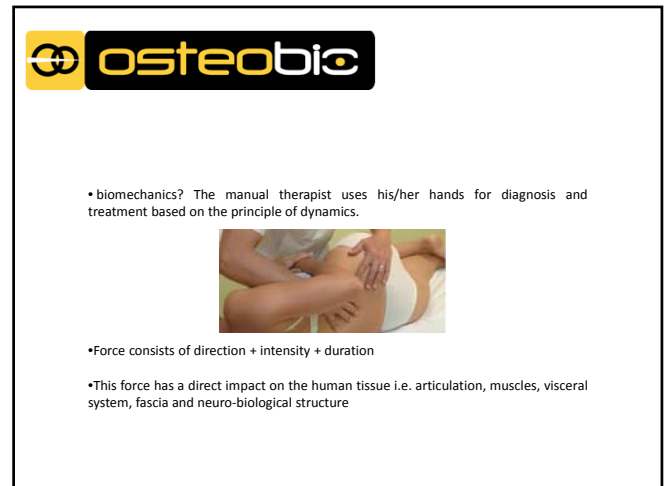
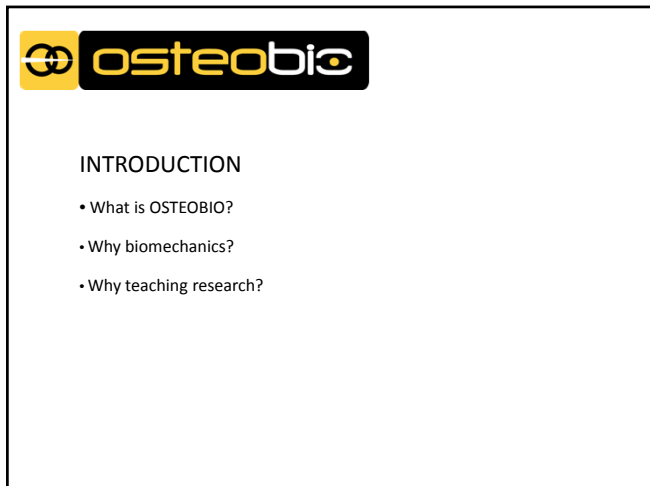
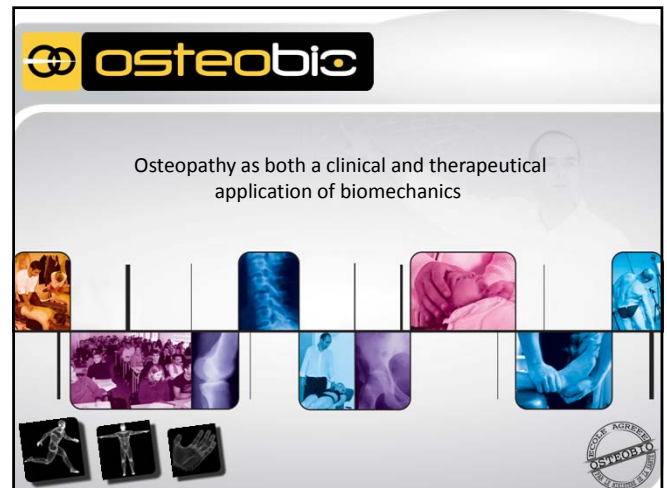
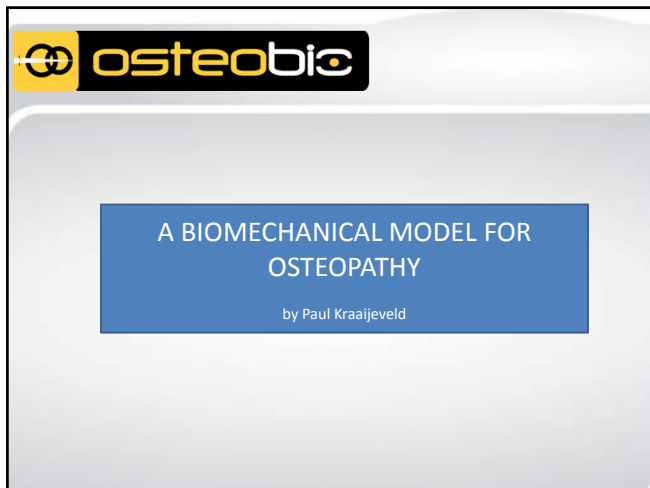






why research?

Parameters of motion and pathology allow osteopathic research in the following fields:

- fundamental research in anatomy, biology and neurology to understand the different parameters and their variations
- experimental research in imaging, biomechanics and information technology allows to understand the interaction between these parameters
- clinical research allows to validate a treatment protocol for a particular pathology



research areas

- movement analysis
- dynamics analysis
- study of fluid flow
- analysis of deformation and biological data
- analysis of neurological data
- study of posture and gesture control
- clinical studies



the example of plagiocephaly

Plagiocephaly has taken almost epidemic proportions : one in three new-borns is affected. The medical field has shown few options as opposed to osteopaths who may integrate this pathology in their treatments. Osteopaths have noted that plagiocephaly is linked to torticollis.

However, by law any treatment of the cervical rachis for babies under six months is bound by a strict protocol.

Only research could justify osteopathic treatment of plagiocephaly at an early stage.



the example of plagiocephaly

Research questions related to plagiocephaly and the Osteobio model are as follows :

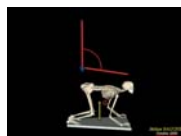
- is there a link between deformation of the cervical rachis and the skull?
- is it possible to quantify the esthetic repercussions?
- can these repercussions be classified based on a definite pathogenic model?
- are functional repercussions substantial and yes, how?
- how to explain the physiological and physiomotoric repercussions as mentioned in research literature? Via a change in the intracranial flowmeter? By an alteration of the neural symmetry? Via an adaptation of motoric patterns?
- how to put in place clinical validation of osteopathic treatment for plagiocephaly?



means, methods and tools to conduct research on plagiocephaly

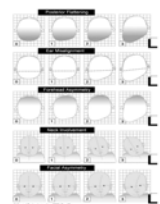
- Study of the occipito-cervical hinge, seen from the base and the front, via a computer programme that segments volume in that area and via an analysis of inertia based on clinical and paraclinical data (eg scans of plagiocephalic babies, in cooperation with CHU Lapeyronie Montpellier, department of pediatric plastic surgery)

- Morphometrical study via MRI of plagiocephaly and its possible impact on cranio-spinal hydrodynamics, in cooperation with CHU Amiens-Nord (laboratory of biophysics and imagery)



For the first research topic CHU supplies clinical data and scans. Osteobio designs a computer programme and trains students how to interpret and analyse a statistical segmentation.

For the second topic CHU supplies a database of MRI images over a large population as well as a computer programme to analyse flows. After that Osteobio students focus on the morphometrical analysis and statistics to establish a correlation between deformation and flux.





results

publication in Journal of Craniofacial Surgery, February 2011)



Presentation at
2011 conference
of ISMRM
(International
Society for
Magnetic
Resonance in
Medicine)



why teaching research at Osteobio?

- Students need to develop critical thinking
- Students need to prioritise and synthesise data
- Students may initiate and/or contribute to clinical research

Research methodology is established

- in collaboration with university laboratories
- in the Osteobio laboratory of biomechanics and modelisation

Students take part in research:

- By carrying out research projects for each year of study at the Annual Spring University
- By writing and presenting a thesis in the fourth and fifth year of study



CONCLUSION

Osteobio proposes a model which allows integration in the public health sector as well as in university hospitals.

The parameters of this model are currently under review. Links between these parameters will allow a better understanding of functional and anatomical pathologies. The predictive character of this model will allow osteopaths to suggest genuine prevention.

Osteopathic expertise in human mechanics represents an added value based on the osteopath's skills and knowledge regarding functional pathology.



Thank you for your attention.

Please feel free to ask any questions.

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