

## WETENSCHAPPELIJKE EVIDENTIE PEMF

- Approved by FDA in 1979 for T/t of fractures and non-union fractures
- “PMFT at least as effective as further surgery in cases of non-union with an overall success rate of 81% against 82% for surgery, although infected non-unions showed a success rate of 81% for PMFT against 69% for surgery” **Gossling et al 1992.**
- In a large group of long-term non-unions and failed arthrodeses (average non-union 4.7 yrs) who had extensive surgical failure(3.4 previous surgical failures) and relatively high infection rate (35%), bony healing took place in 75% of the patients treated with PMFT **Bassett et al 1982**
- In a double-blind prospective study of lumbar inter-body fusions, PMFT group had 92% healing rate whereas non-PMFT group had only 65% healed. **Mooney V. Spine**
- Similar study in 2000 showed 97.6% fusion rate in PMFT group but only 52.6% in control group. **Marks RA. 2000**
- Systematic literature review naar de "Therapeutic effects of whole-body devices applying pulsed electromagnetic fields (PEMF)". **Hug en collega's 2012**

## BIOLOGICAL EFFECTS OF LASER

- 300% increase in ALP expression in rat femoral fractures. **Dickson et al The Queens Uni., Belfast**
- Effect appears to be photo-chemical – NOT thermic
- Activates mitochondrial respiratory chain components
- Increases electron transfer in cytochrome oxidase  
(Cytochrome oxidase is key photo-acceptor of light in NIR spectral range)
- Increases levels of ATP synthesis in isolated mitochondria
- Increases osteoblast activity and reduces osteoclast activity  
**Yaakobi + Oron Tel Aviv Uni.**
- Weight percentages of Ca and P increased – P= 0.037 Ca and P= 0.034 P  
**Khadra M et al 2004**

## **Hoofd**

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## Nek

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## Elleboog

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## Rug

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## **Knie**

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## Wetenschappelijke evidenties/ case studies van Proff. Dr. R. Saggini

- <http://www.rsaggini.it/online/pubblicazioni/>
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