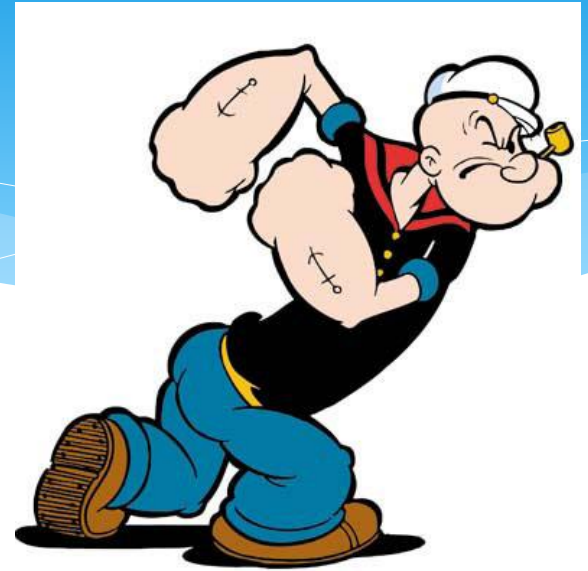
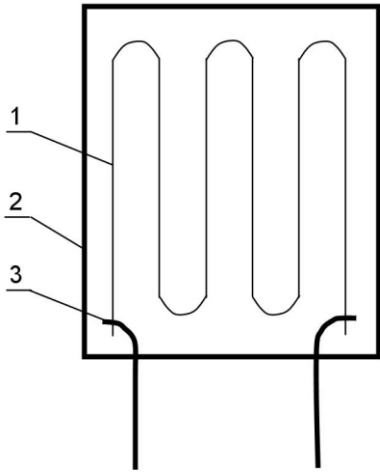


# Special dynamometry for the purposes of ergonomics

Bi9100 Ergonomics and applied anthropology

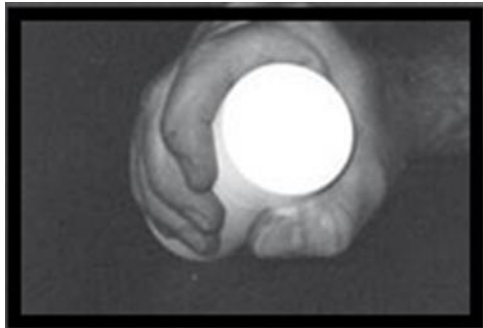
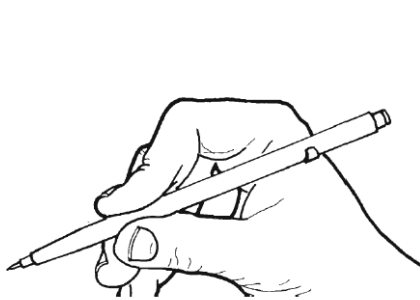
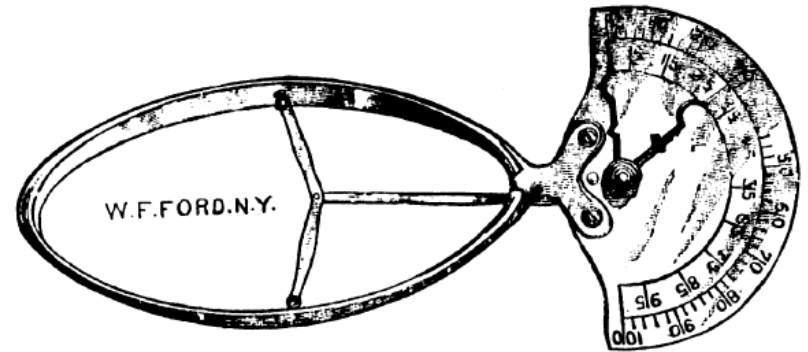
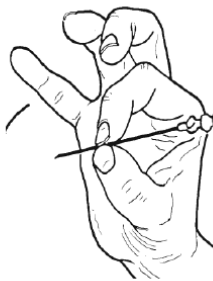
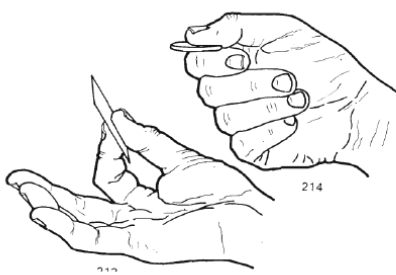
# Dynamometry

## Measurement of force



# Dynamometry

## Handgrip strength



# Handgrip strength

- \* Represents well overall body strength
- \* Closely related to fitness and health-status
- \* A lateral characteristic – effect of upper limb dominance
- \* Physical load effect
- \* Closely associated to several somatic and psychosocial characteristics
- \* Application in ergonomics – measuring force necessary to manipulate certain tools; resistance when opening packages etc.

# Functional aspects

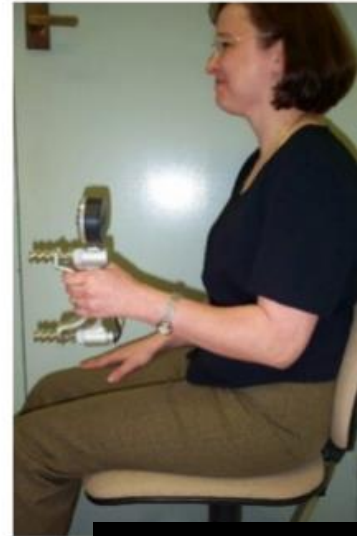


# Testing method - instruments



# Testing method – position

- \* Elbow joint flexion/extension?
- \* Sitting or standing position?
- \* Non-uniform method
- \* Conflicting conclusions from different studies
- \* Ng, Fan 2000 methodical study – no significant difference found for flexed or extended positions in the elbow joint
- \* Innes review (manual) – recommends flexed position
- \* Hyperflexed elbow position – hgs pronouncedly lower
- \* Overall – good reliability in repeat measurements scenarios



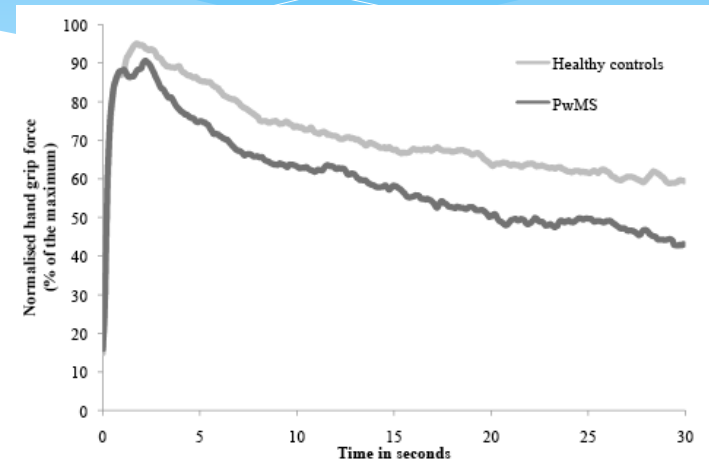
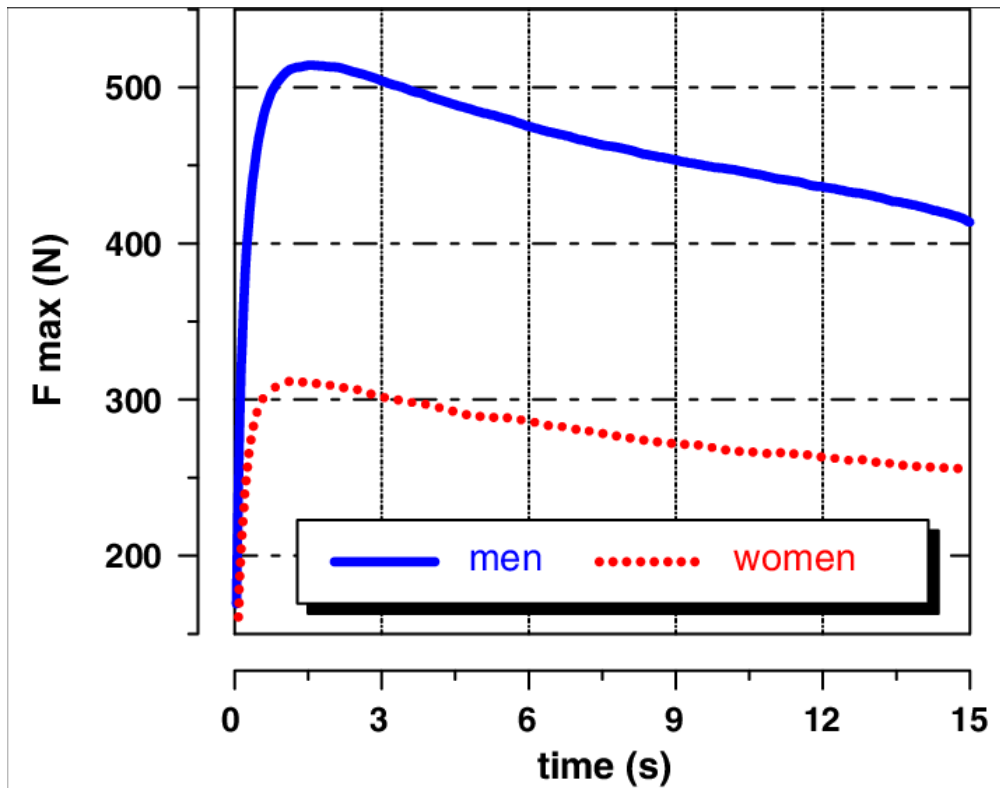
# Testing method – position

- \* Clinical studies – testing optimal positions for nutritional status assessment in hospitalized patients
- \* Sitting, reclined, elbows support?
- \* Better reliability in clinical setting – elbow support



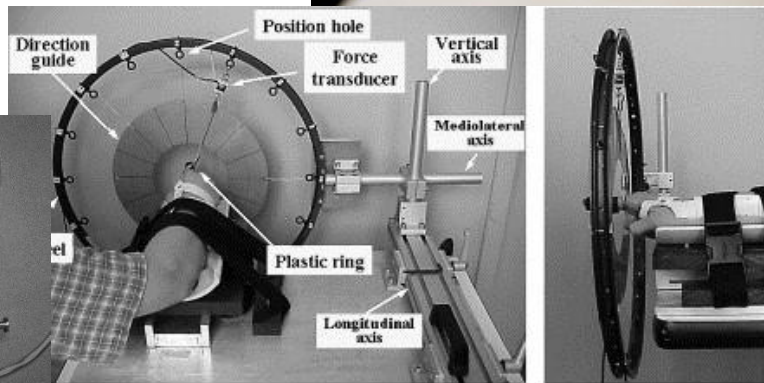
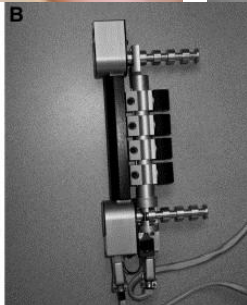
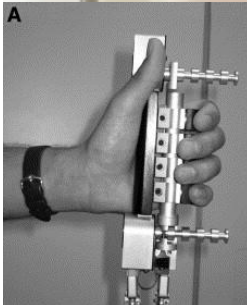


# Testing method – endurance evaluation; force curve course



# HGS – individual fingers

- \* Predominantly clinical importance – testing finger strength after surgery or in neurological disorder cases



(A)

(B)



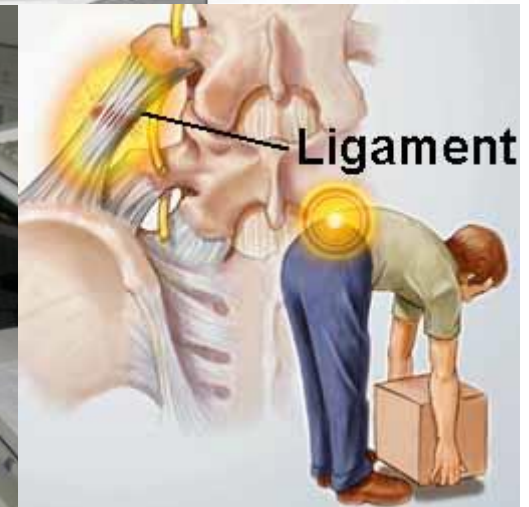
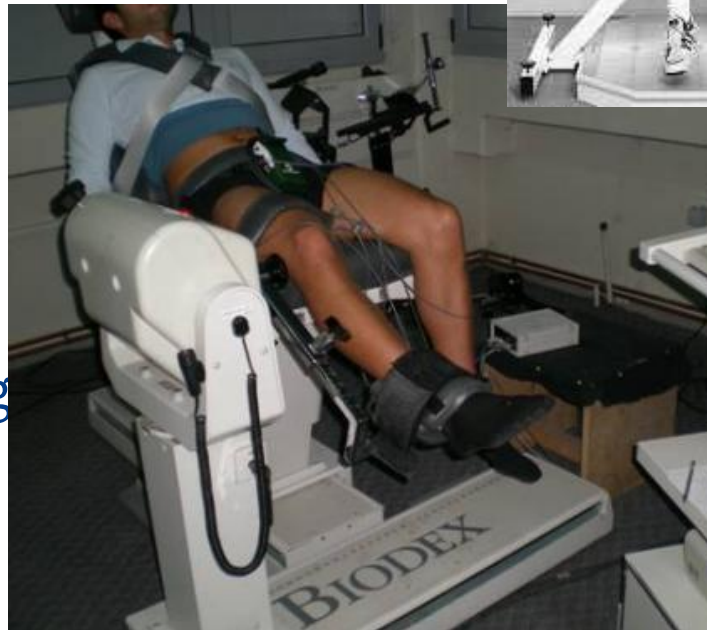
# Original dynamometer setup - accessory

- \* Inovative design
- \* Strength testing of individual fingers or the whole hand
- \* Gradually adjustable for individual fit



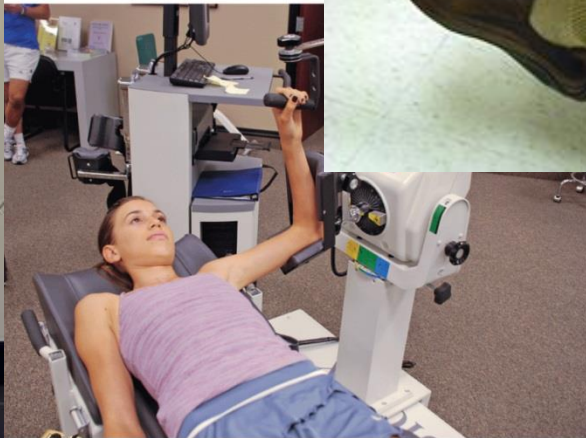
# Dynamometry

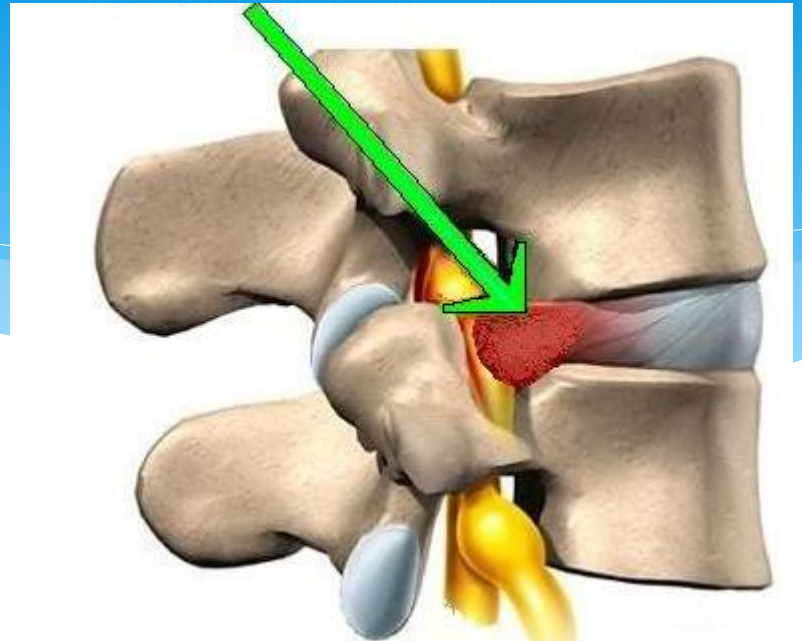
- \* Strength testing in uncommon settings
- \* Lower extremity muscle groups
- \* Extension strength in the knee joint – a good indicator of functional fitness in older people
- \* Applications in ergonomics – load lifting
- \* Standard limits for physically demanding jobs
- \* Maximum loads





Leg Lift





TIRE FLIP