

# BIOMEDICAL ENGINEERING DESIGN

WB2308

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# DESIGN ASSIGNMENTS:

- CONCEPTUAL
- REPORT
- PRESENTATION

# DESIGN ASSIGNMENTS

## CONCEPTUAL PHASE:

- PROBLEM DEFINITION
- SEARCH FOR SOLUTIONS
- CHOICES

# DESIGN ASSIGNMENT

## PROBLEM ANALYSIS:

- NOVEMBER 16, 2007; 08.45 hr.
- ROOM E

# DESIGN ASSIGNMENT

## REPORT:

- ACCOUNT
- BRIEF: 10 - 12 PAGES

# DESIGN ASSIGNMENT

## FINAL PRESENTATION:

- DECEMBER 21, 2007; 08.45 hr.
- ROOM E
- 10 MINUTES

# DESIGN ASSIGNMENT

## SUPERVISION:

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# ASSIGNMENTS:

- REFILL UNIT CO2
- WRIST PROSTHESIS
- COUPLING MECHANISM ELBOW CONTROL
- GLOVELESS VC HAND PROSTHESES
- SHOULDER HARNESS – BRASSIERE COMBI
- HAND GRIP
- SHOPPING CART
- SIMPLE ARMON
- MOBILE HEAD SUPPORT
- HAND PALM
- SIT-TO-STAND AID
- KNEE HOLDER FOR KNEE ARTHROSCOPY
- SHOULDER DISTRACTOR
- FOOT DISTRACTOR
- CORRECTION OSTEOTOMY
- SCREW FIXATION



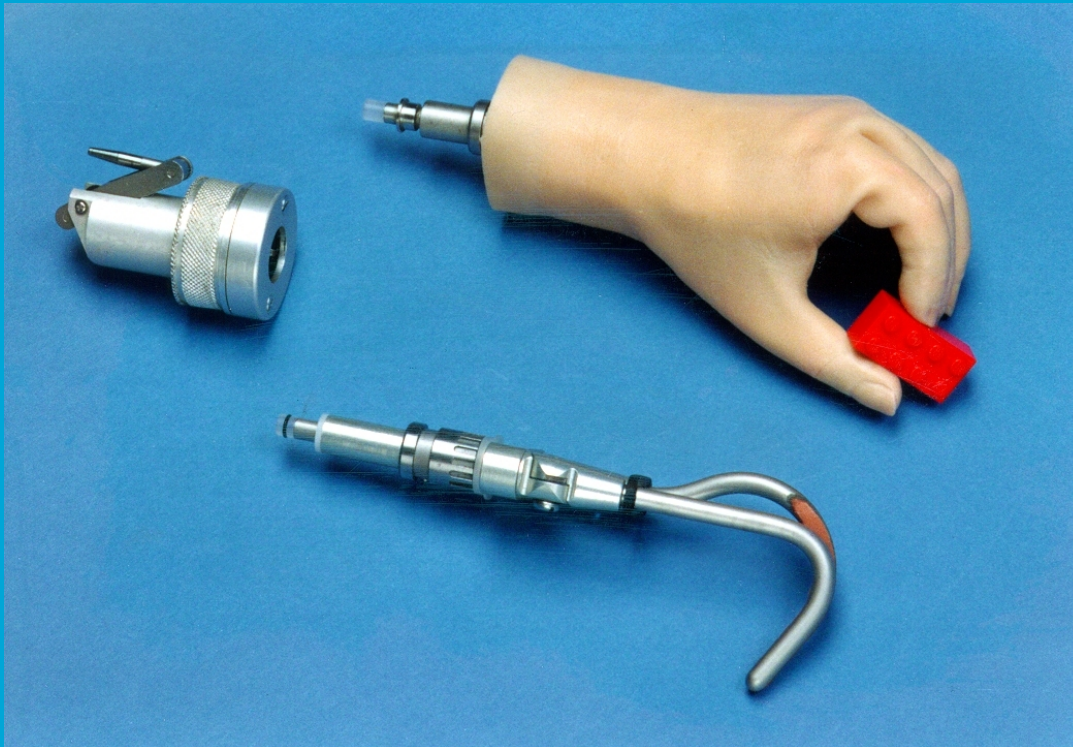
# REFILL UNIT CO<sub>2</sub>

- Design a CO<sub>2</sub>-cartridge that can be safely refilled



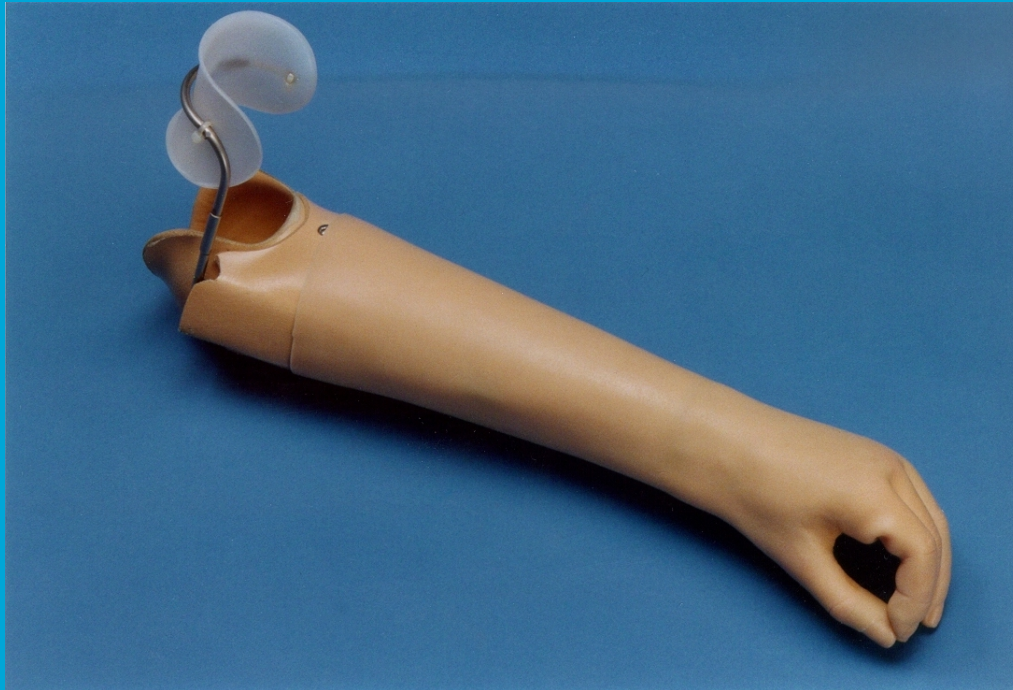
# WRIST PROSTHESIS

- Design a wrist prosthesis with small axial length



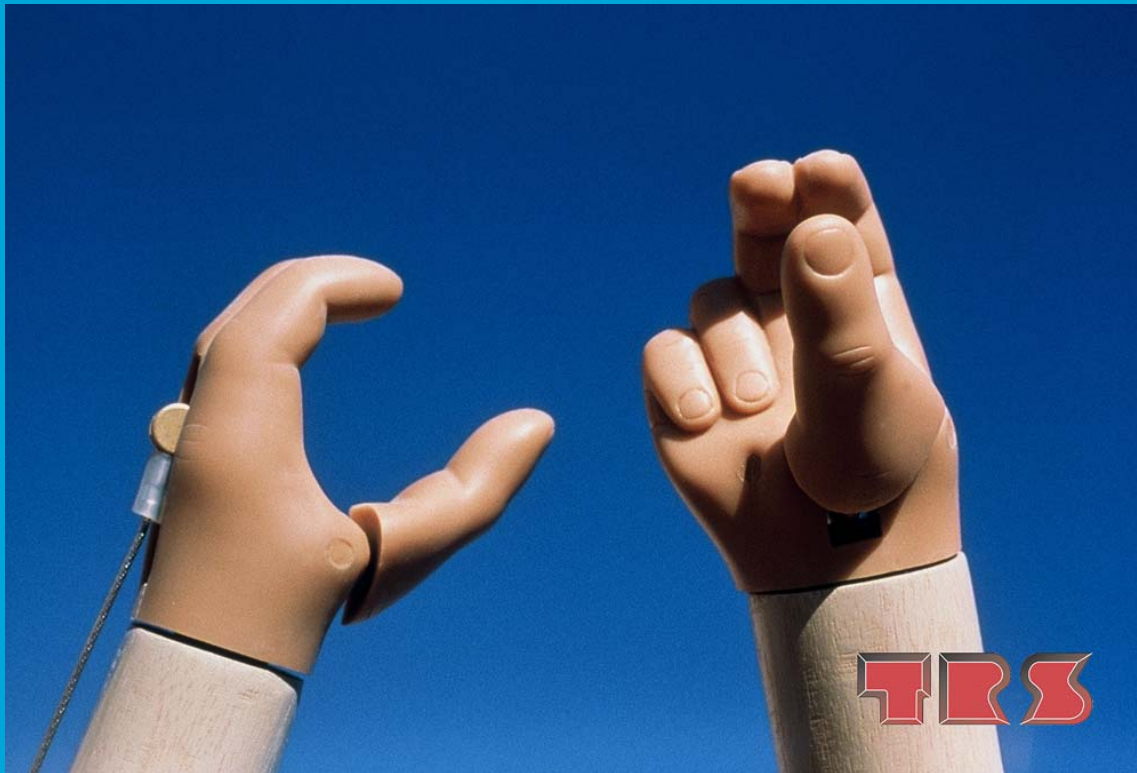
# COUPLING MECHANISM ELBOW CONTROL

- Design a mechanism that allows decoupling of elbow movements and hand movements



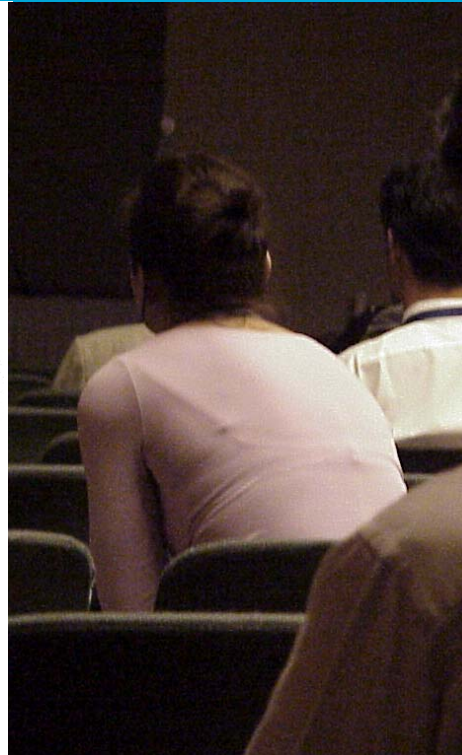
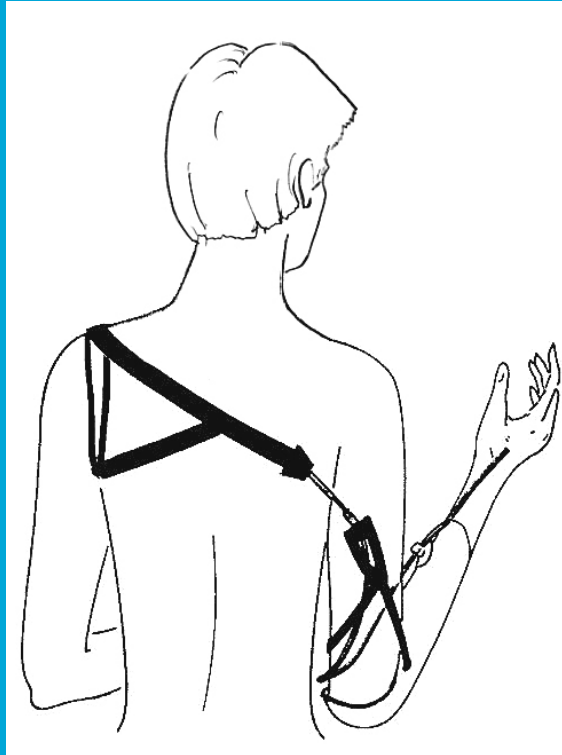
# GLOVELESS HAND PROSTHESIS

- Design a gloveless hand with a high cosmetic value



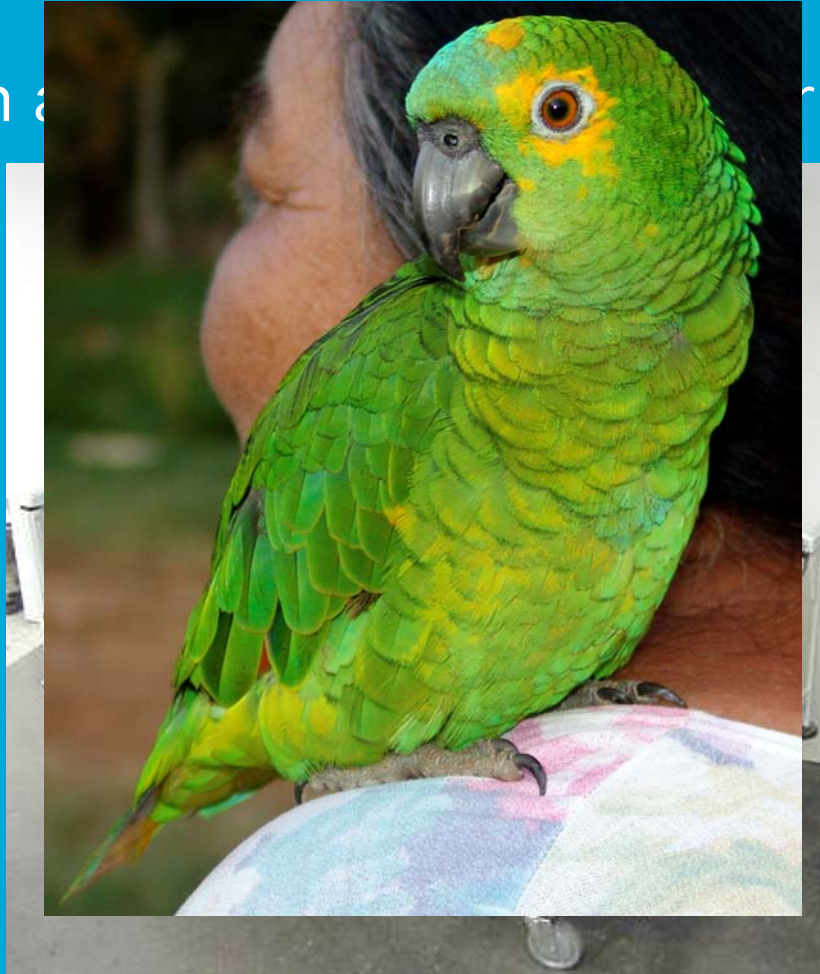
# SHOULDER HARNESS – BRASSIERE COMBINATION

- Design a shoulder harness – bra combination



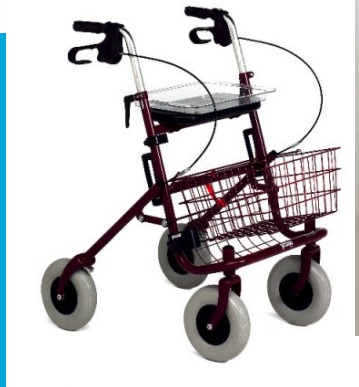
# HAND GRIP

- Design an a... in beds



# SHOPPING CART

- Design a shopping cart with integrated seat



# MOBILE HEAD SUPPORT

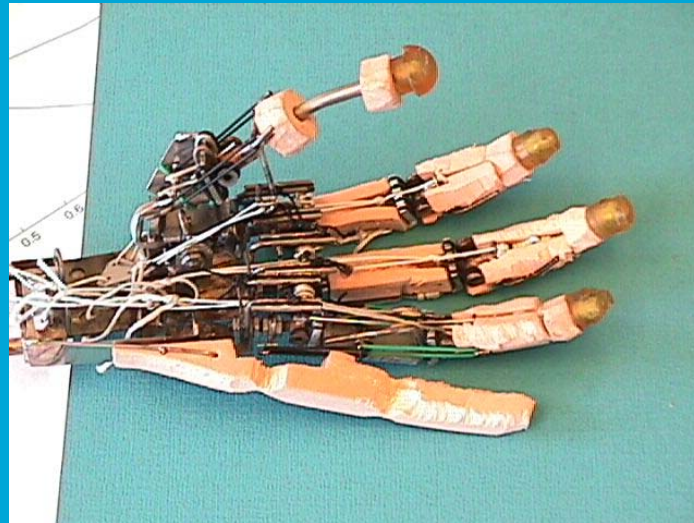
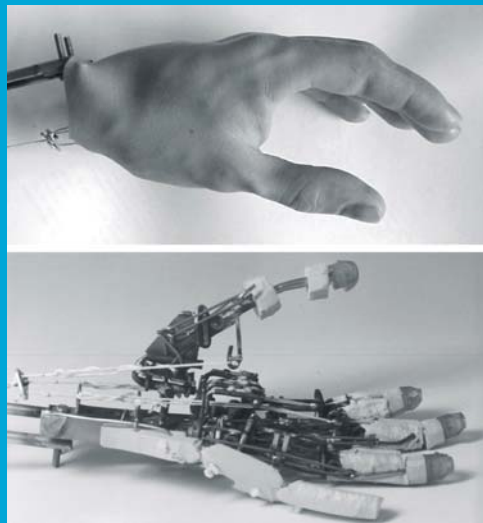
- Design a compensation system for support of the head that provides a reasonable range of motion.





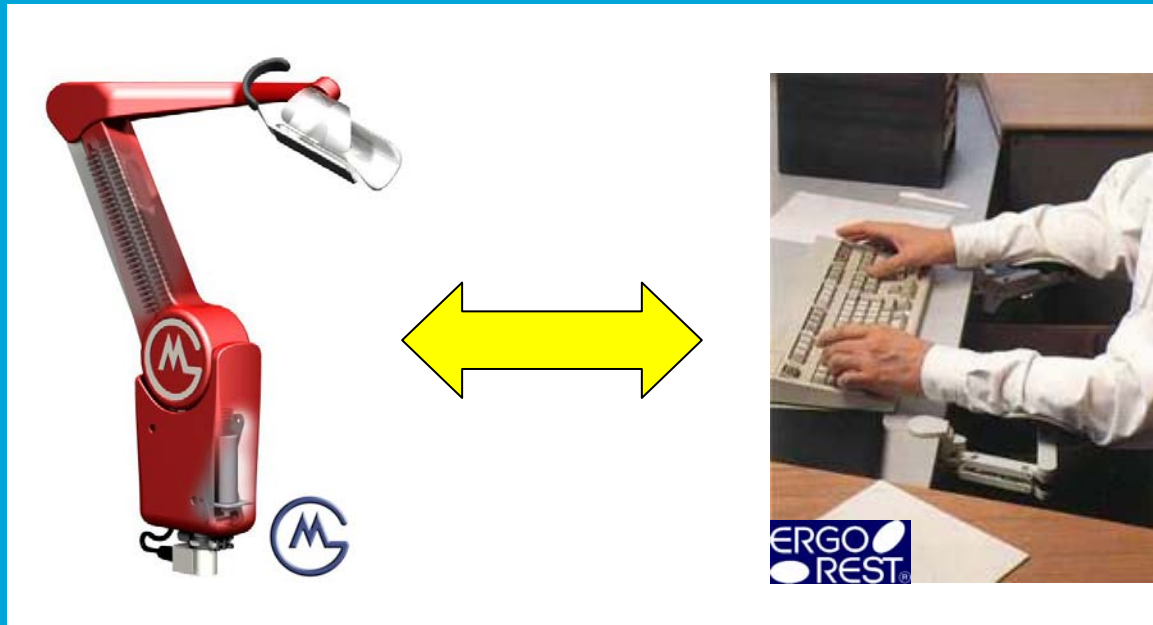
# HAND PALM MECHANISM

- Design a mechanism that houses between three and five fingers and that distributes the operating force amongst the fingers.



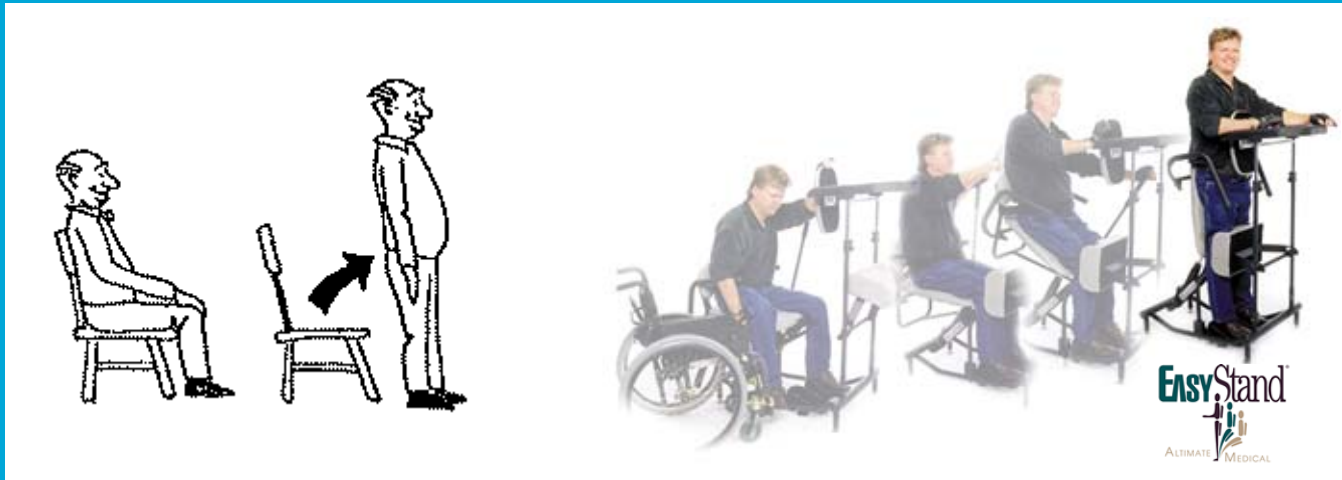
# SIMPLE ARMON

- Design an arm support device that is less complicated than ARMON, while providing reasonable range of motion.



# SIT-TO-STAND AID

- Design a device that can help people getting up and sitting down. Consider the application of statically balanced spring mechanisms



# KNEE HOLDER FOR KNEE ARTHROSCOPY

- Design a mechanism that compensates the mass of the lower leg, but still enables manipulation of the knee joint



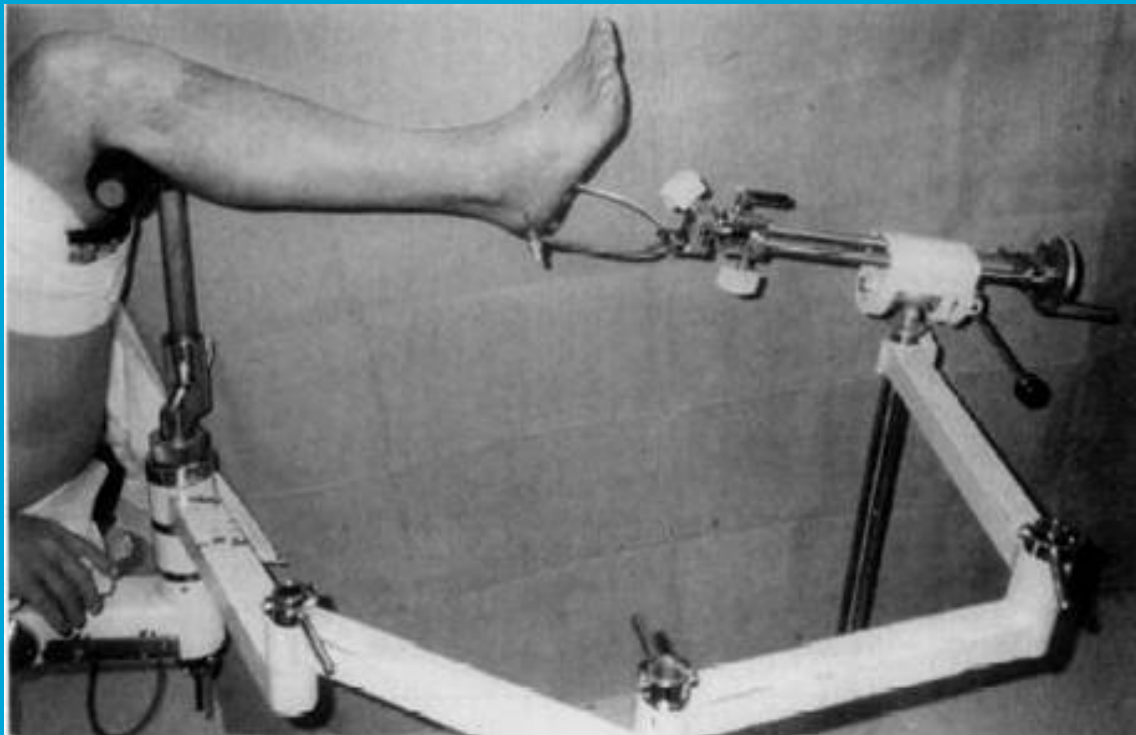
# SHOULDER DISTRACTOR

- Design a mechanism that enables manipulation of the shoulder joint and holds the joint in a desired position



# FOOT DISTRACTOR

- Design a mechanism that enables distraction of the three main joints in the hindfoot/ankle joint



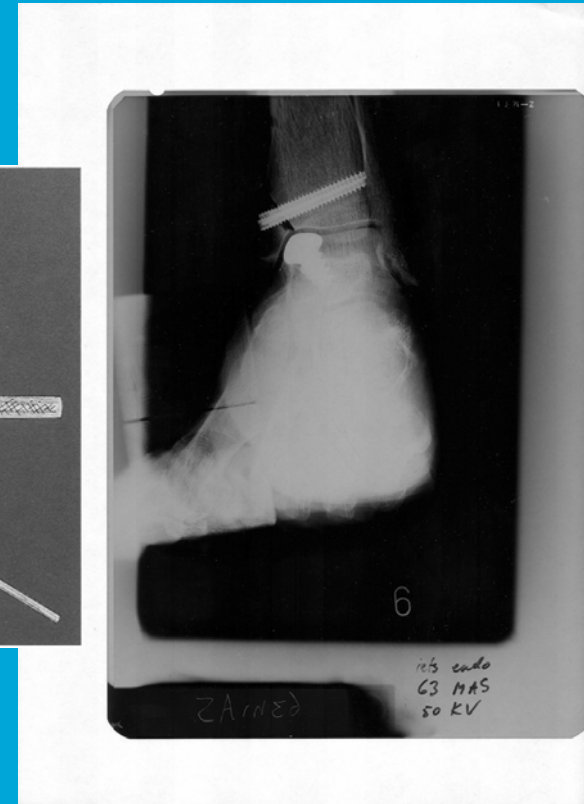
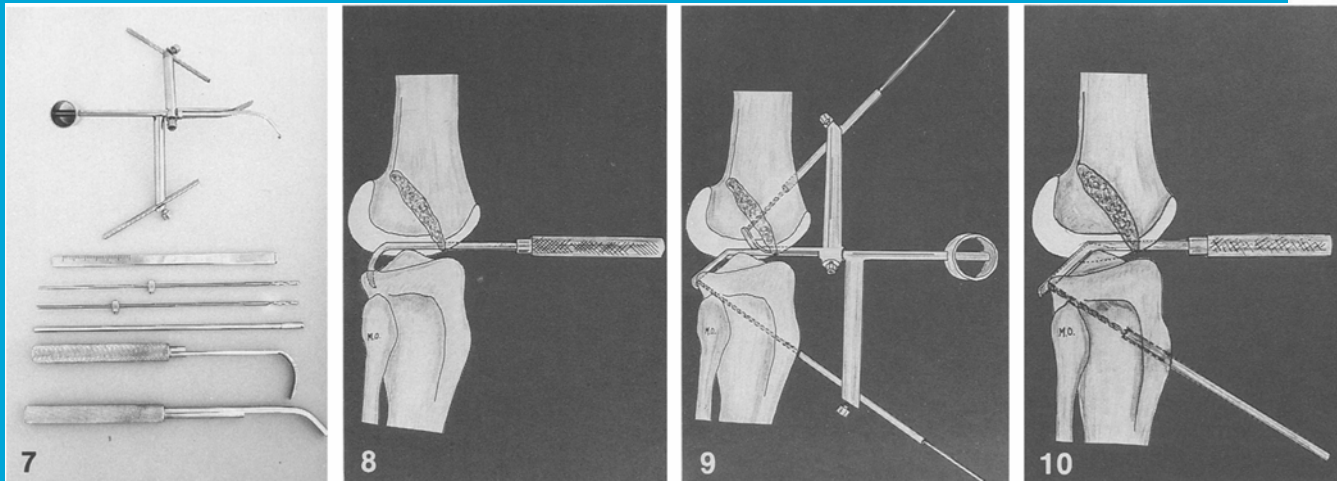
# CORRECTION OSTEOTOMY

- Design a mechanism that enables precise sawing of the bones



# SREW FIXATION

- Design a mechanism that facilitates the placement of screws in bones





# DESIGN ASSIGNMENT

- TEAM UP: GROUPS of THREE
- INTERDISCIPLINARY [if possible]
- MAX. 2 GROUPS SAME ASSIGNMENT