

# DEVELOPING WORLD PROSTHETICS

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# DOES CHARITY HELP ?

BBC FILM – ‘WHERE ANGELS FEAR TO TREAD’

# UNIQUE PROBLEMS NEED UNIQUE SOLUTIONS

## PATIENT PROFILE

- ▶ AGE
- ▶ ETIOLOGY OF AMPUTATION
- ▶ ECONOMIC STATUS
- ▶ LIFESTYLE
  
- ▶ AVAILABILITY OF PROSTHETIC SERVICES
- ▶ ACCESS TO PROSTHETIC SERVICES

# PATIENT PROFILE

AGE

# PEDIATRIC AMPUTEES

- ▶ OVER 300 000 CHILDREN ARE SEVERELY DISABLED BECAUSE OF LANDMINES

SIGNIFICANT ADDITION EVERY YEAR

# PATIENT PROFILE

## ETIOLOGY OF AMPUTATION

# DEVELOPING WORLD

SINGLE LARGEST CAUSE



# IMPLICATIONS OF AGE & ETIOLOGY

- ▶ NORMAL VASCULATURE
- ▶ GOOD MUSCLE TONE
- ▶ SENSATE SKIN
- ▶ NO CO MORBIDITY
  
- ▶ EXTREME FUNCTIONAL DEMANDS
- ▶ WAGE EARNERS

# COUNTRIES WITH THE LARGEST NUMBER OF LANDMINES

▶ AFGANISTAN	9 500 000
▶ ANGOLA	9 000 000
▶ IRAQ	7 500 000
▶ KUWAIT	5 000 000
▶ CAMBODIA	5 500 000
▶ WESTERN SAHARA	1 500 000
▶ MOZAMBIQUE	1 500 000
▶ SOMALIA	1 000 000
▶ BOSNIA	1 000 000
▶ CROATIA	1 000 000

# IMPLICATIONS OF THE NUMBERS

## RAPID FIT TECHNOLOGY

# PATIENT PROFILE

## ECONOMIC STATUS

# IMPLICATIONS OF ECONOMIC STATUS

- ▶ AFFORDABLE
- ▶ DURABLE
- ▶ ACCESSIBLE PROSTHETIC SERVICES

# PATIENT PROFILE

LIFESTYLE

# FUNCTIONAL REQUIREMENTS

- ▶ SQUATTING
- ▶ SITTING CROSS LEGGED
- ▶ NEGOTIATING UNEVEN TERRAIN
- ▶ WALKING BAREFOOT
- ▶ WORKING IN WATER

# CONSIDERATIONS IN THE DESIGN PROCESS

## ACTIVITY

Squatting

Cross legged

Uneven terrain

Barefoot

Farming

## MECH.REQUIREMENT

Dorsiflexion

Transverse rotation

Inversion–Eversion

Robust & Cosmetically  
like N foot

Waterproof

# AVAILABILITY OF PROSTHETIC SERVICES

DEMAND >>>>>>> SUPPLY  
LACK OF AWARENESS

# ACCESSIBILTY

SYSTEM OF MULTIPLE SEQUENTIAL  
APPOINTMENTS

LONG DRAWN PERIOD OF FITTING

# CONSIDERATIONS IN MATERIAL SELECTION

- ▶ MATERIAL PROPERTIES
- ▶ COST
- ▶ LOCAL AVAILABILITY
- ▶ FAMILIARITY OF LOCAL PEOPLE

# TECHNOLOGY

- ▶ APPROPRIATE
- ▶ LOW COST
- ▶ SIMPLE
- ▶ RAPID FIT
- ▶ DURABLE

# PURPOSE OF RESEARCH

REGARDLESS OF ALL COMPARISON,  
PROSTHETICS IN BOTH DEVELOPED &  
DEVELOPING COUNTRIES ARE EXPENSIVE  
LEAVING A SIZABLE NUMBER OF AMPUTEES  
UNABLE TO AFFORD THEM

# RESEARCH OUTLOOK

SOCIAL, CULTURAL & ECONOMIC  
CONSIDERATIONS ARE AS IMPORTANT AS  
TECHNOLOGICAL ISSUES

IT'S OK TO BE  
DIFFERENT !



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EC.722 Special Topics at Edgerton Center:Developing World Prosthetics  
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