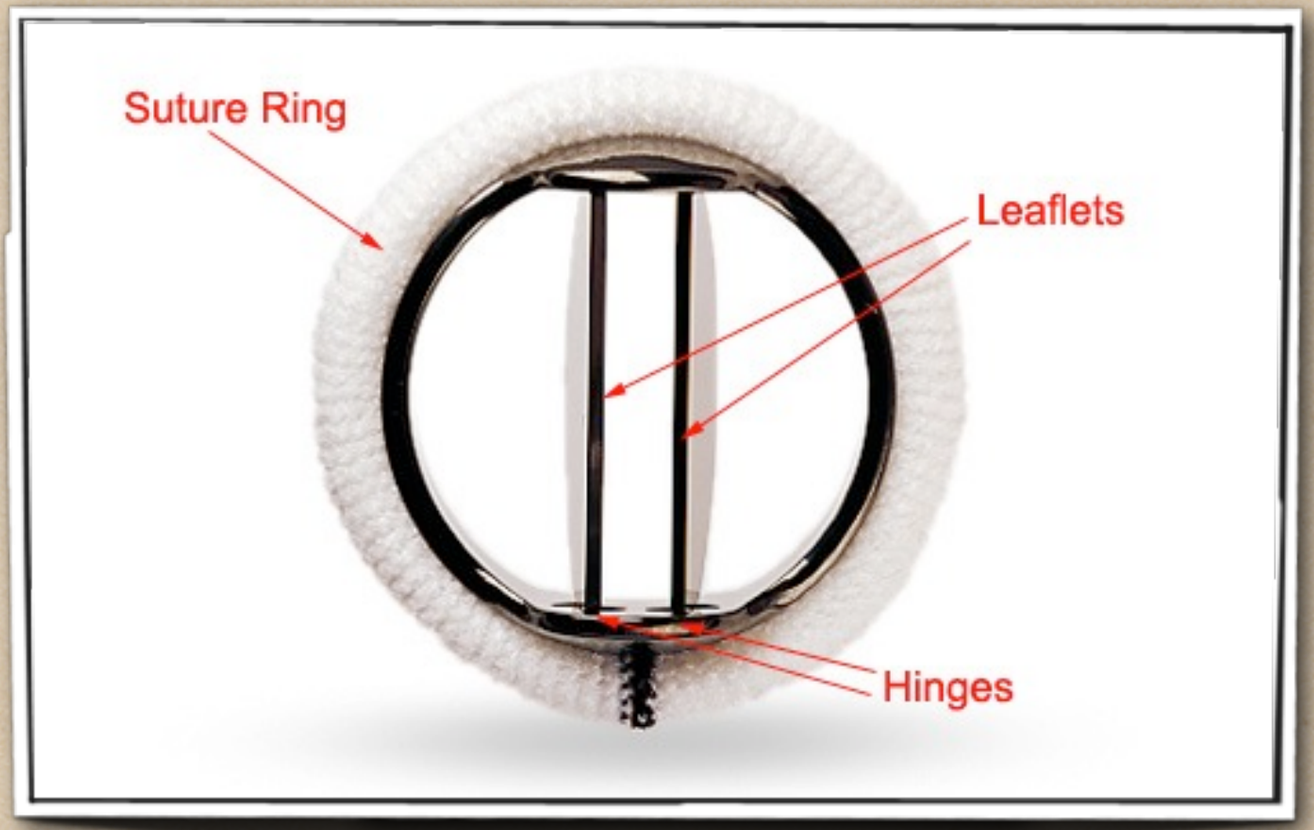

Sakti Srivastava, MBBS, MS
Associate Professor, Surgery
Chief, Division of Clinical Anatomy

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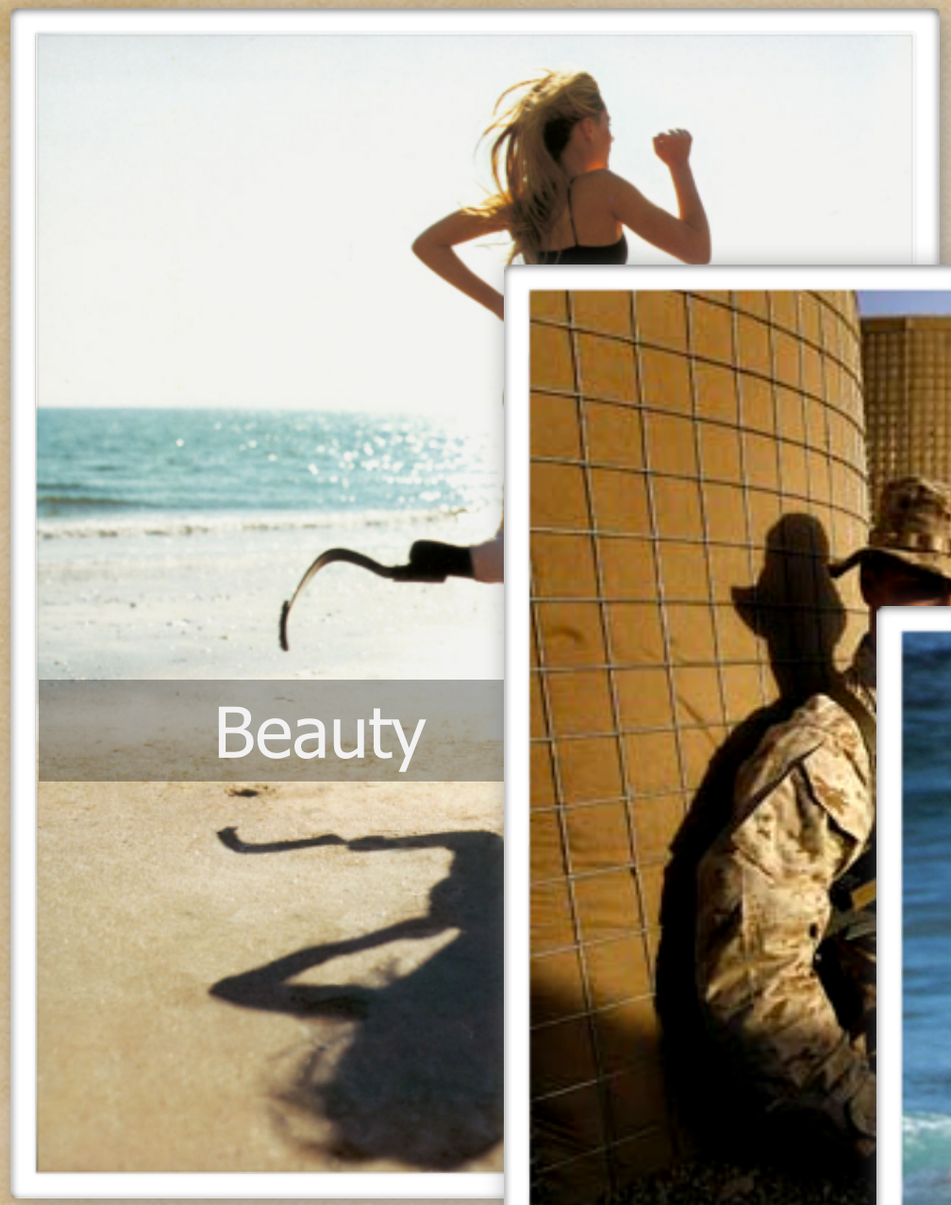
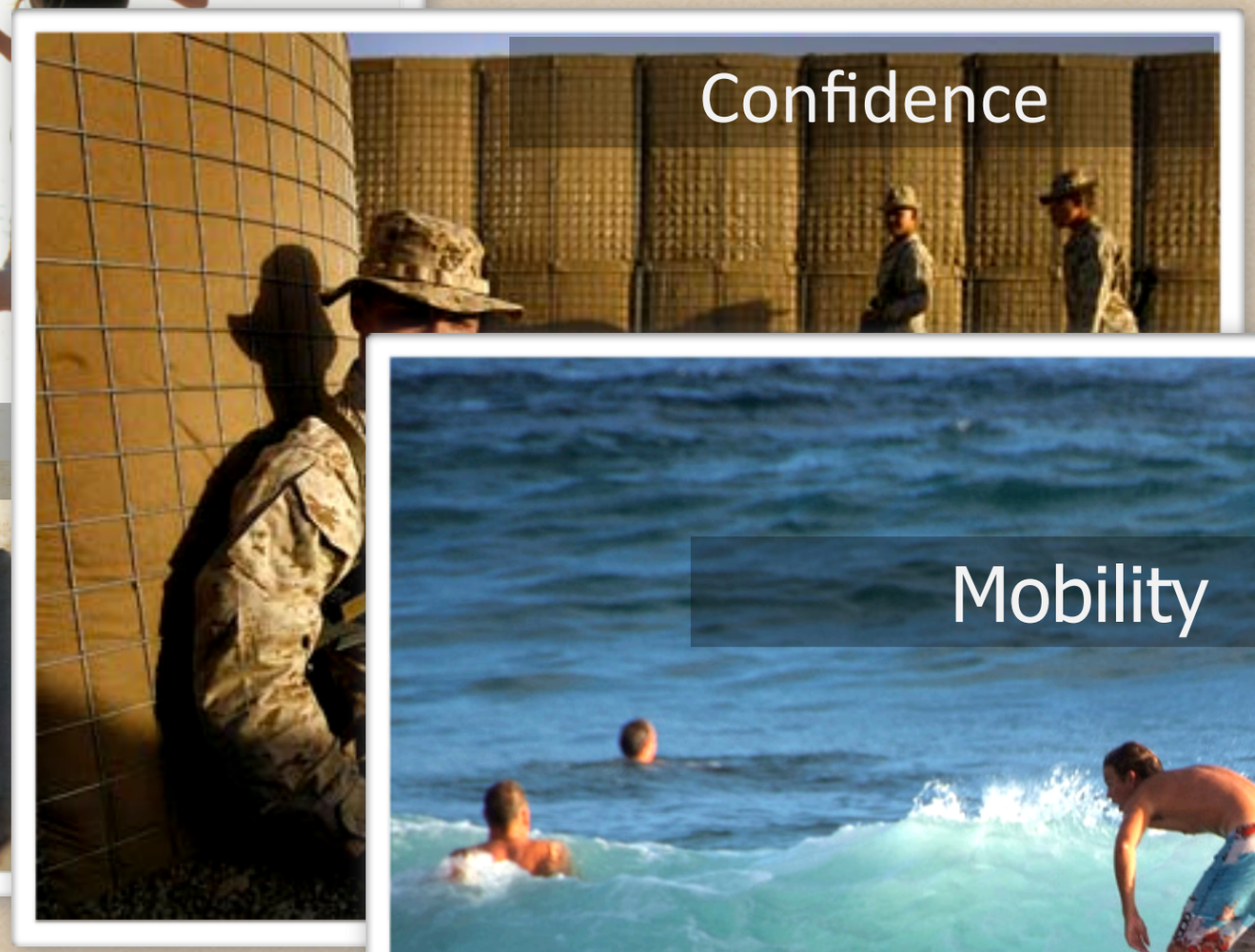
SCHOOL OF MEDICINE
Division of Clinical Anatomy


Beauty


Confidence


Mobility

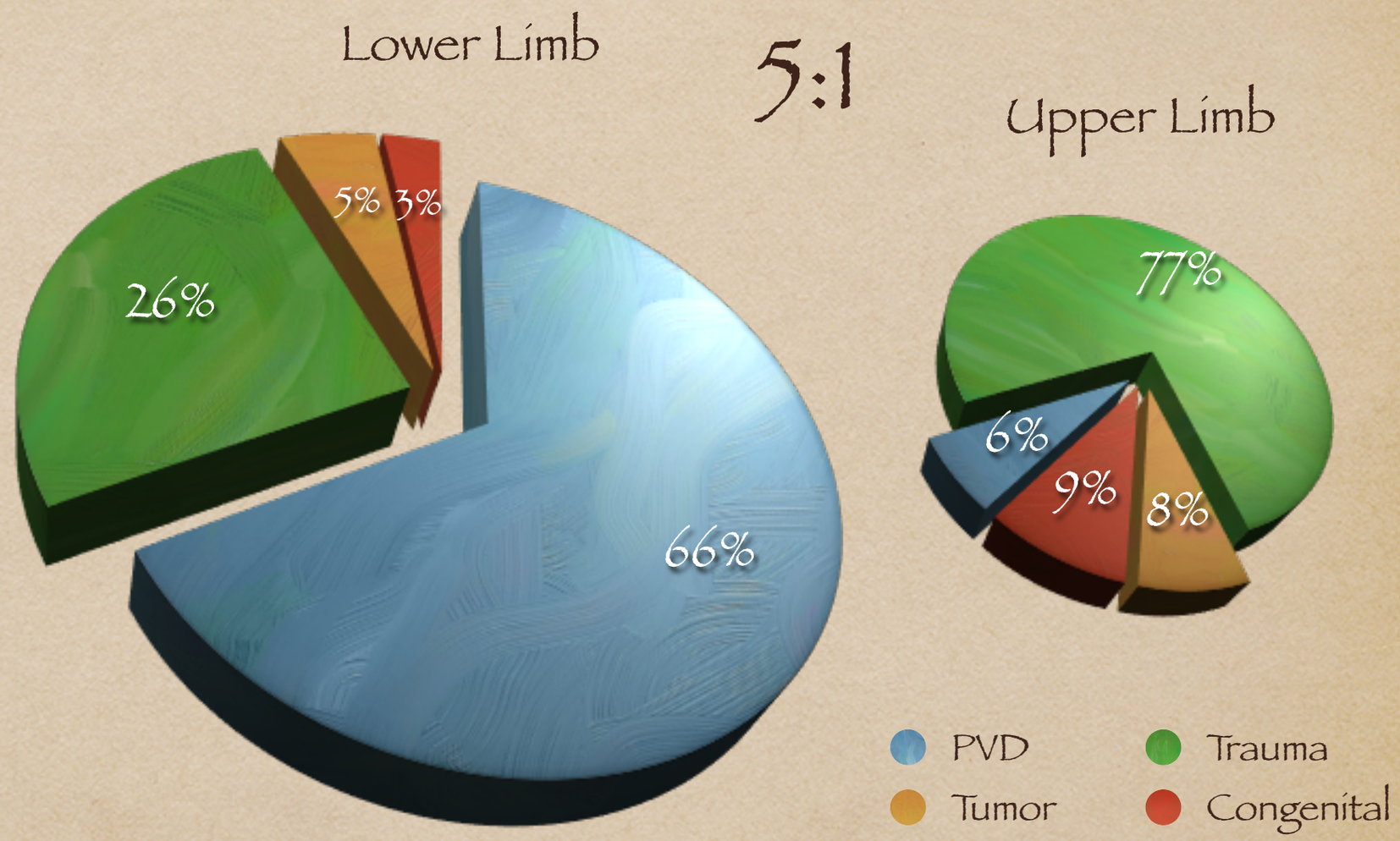
Amputations Causes

Disease

Trauma

Tumor

Congenital



Amputations Demographics

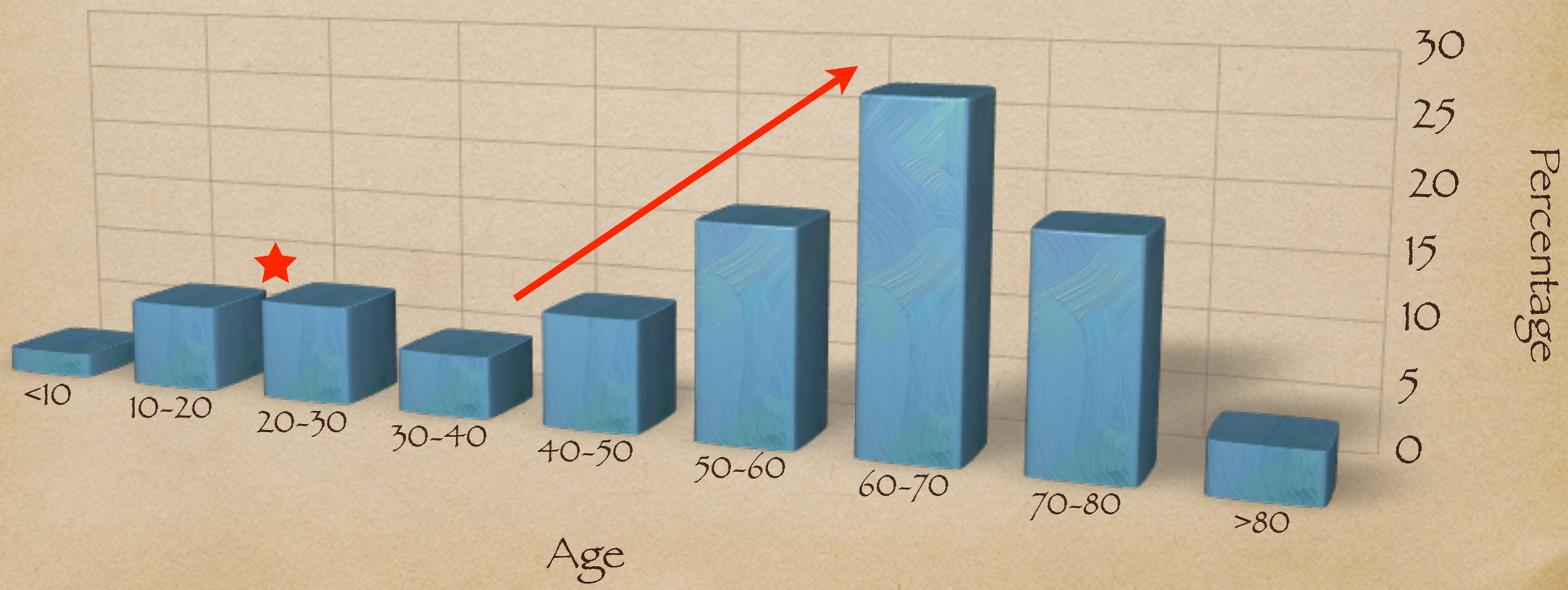
1.7 million in US

5/1000 persons

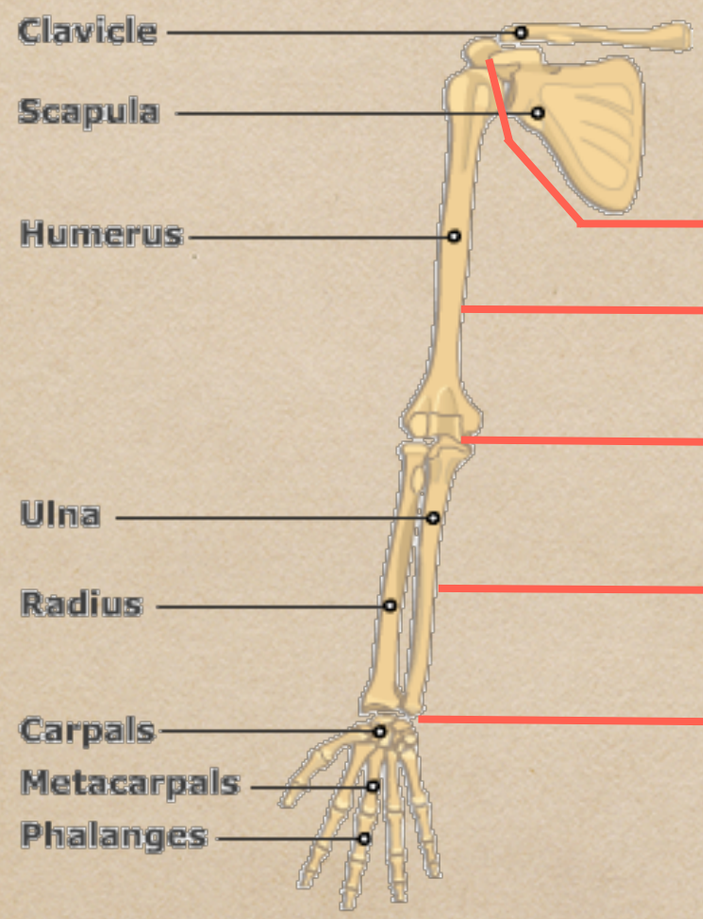
130,000 every year

> 10 million globally

2/1000 persons



Amputations Levels



Shoulder Disarticulation

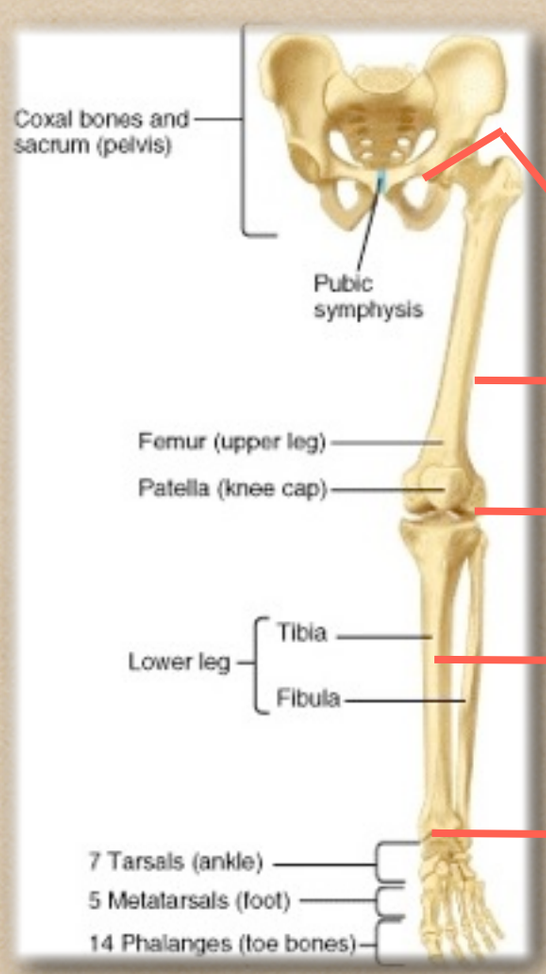
Transhumeral

Elbow Disarticulation

Transradial

Wrist Disarticulation

Amputations Levels



Hip Disarticulation

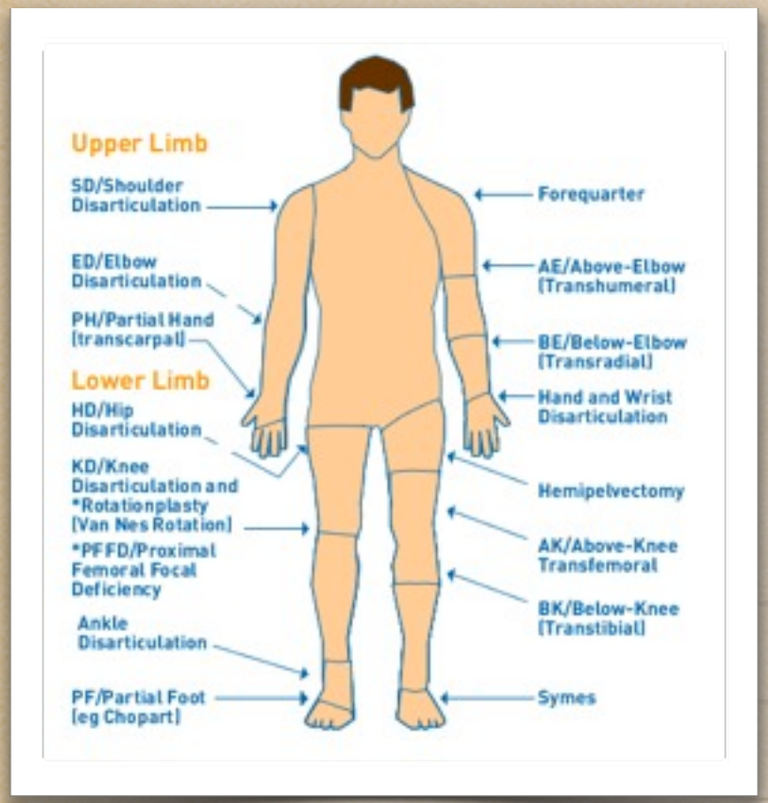
Transfemoral

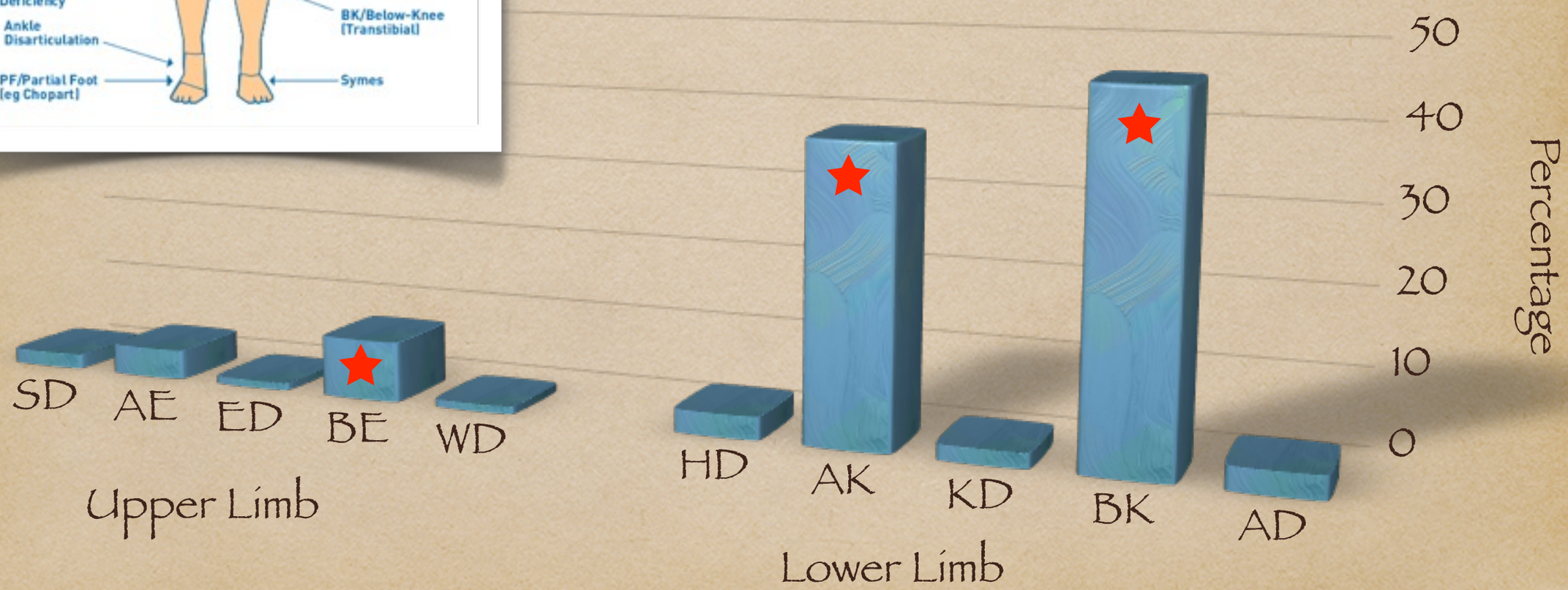
Knee Disarticulation

Transtibial

Ankle Disarticulation

Amputations Levels





A brief history...

Vedic Leg
Queen Vishpla

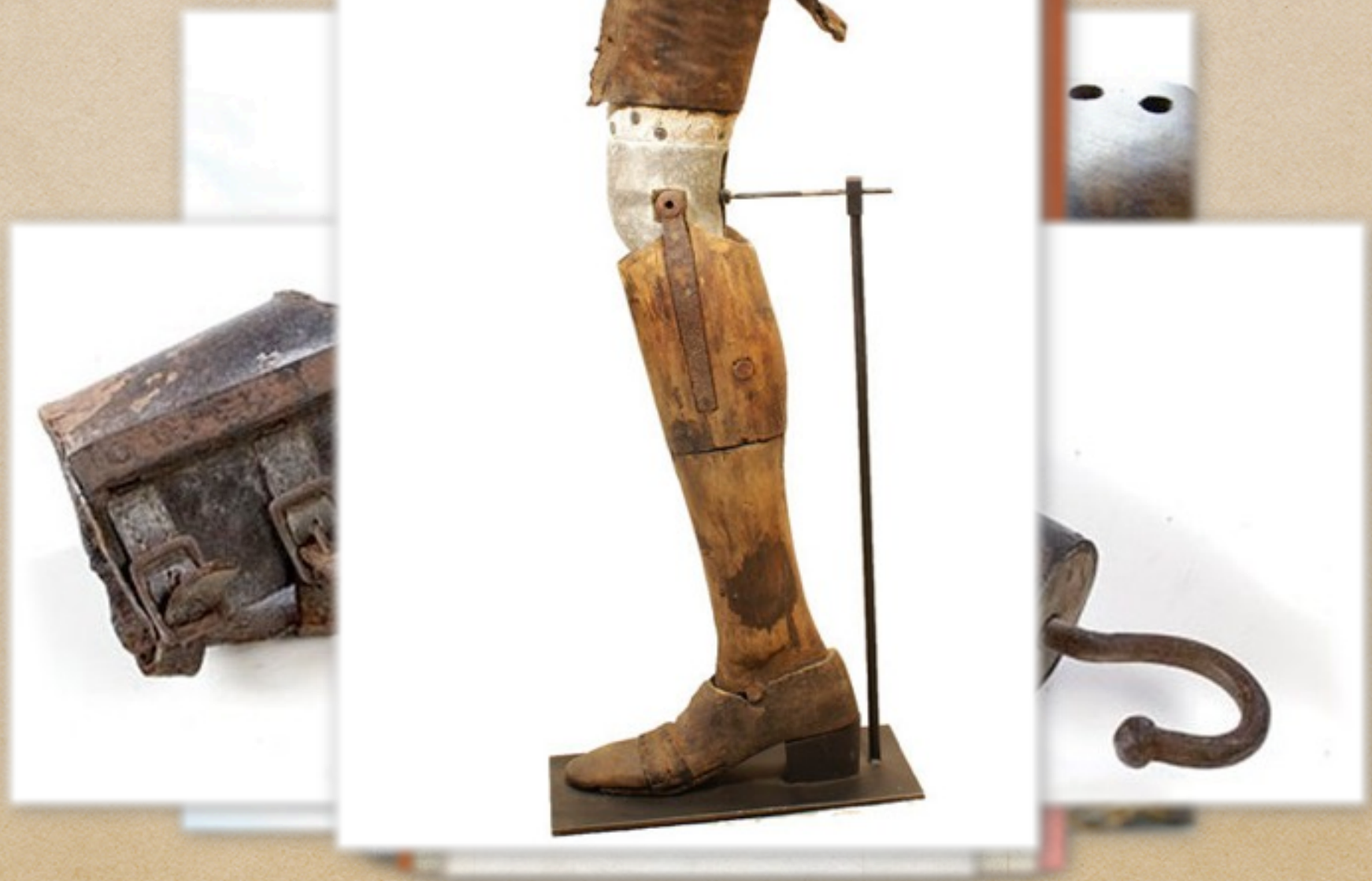
3500 BCE

Ancient
Egypt Toe

900 BCE

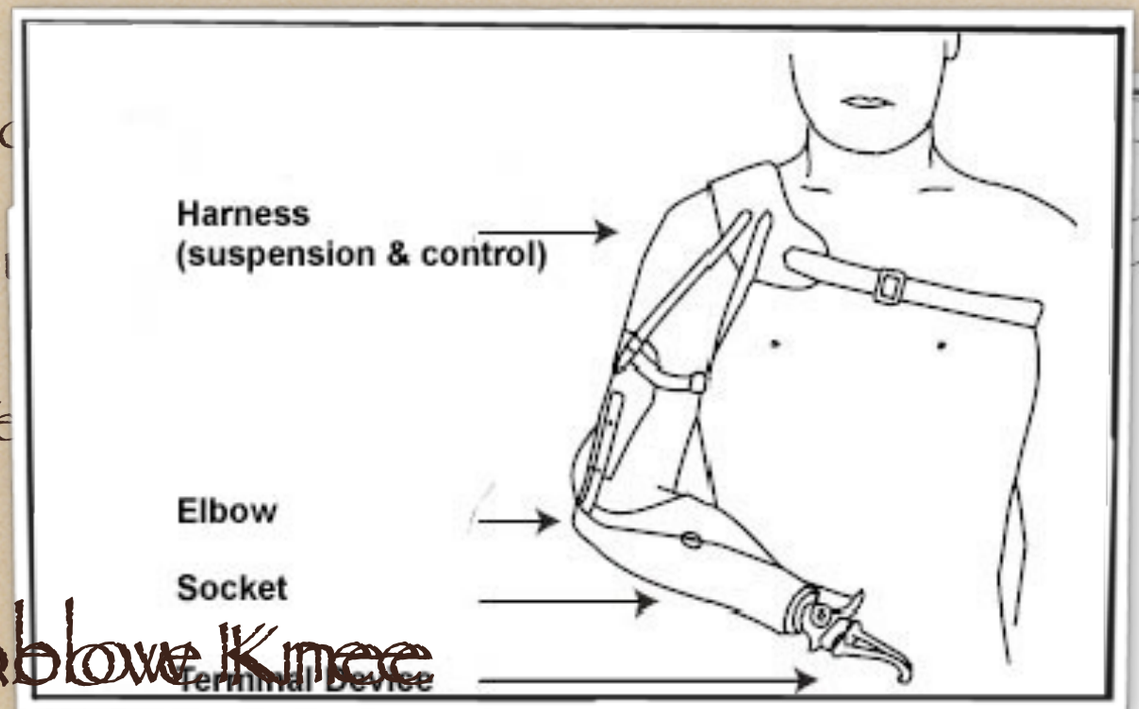
Bly Leg
Potts

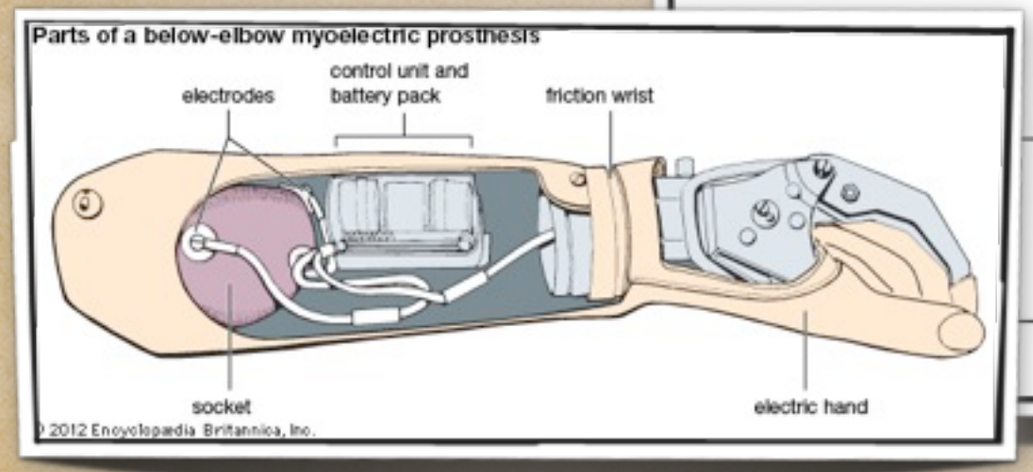
800 CE

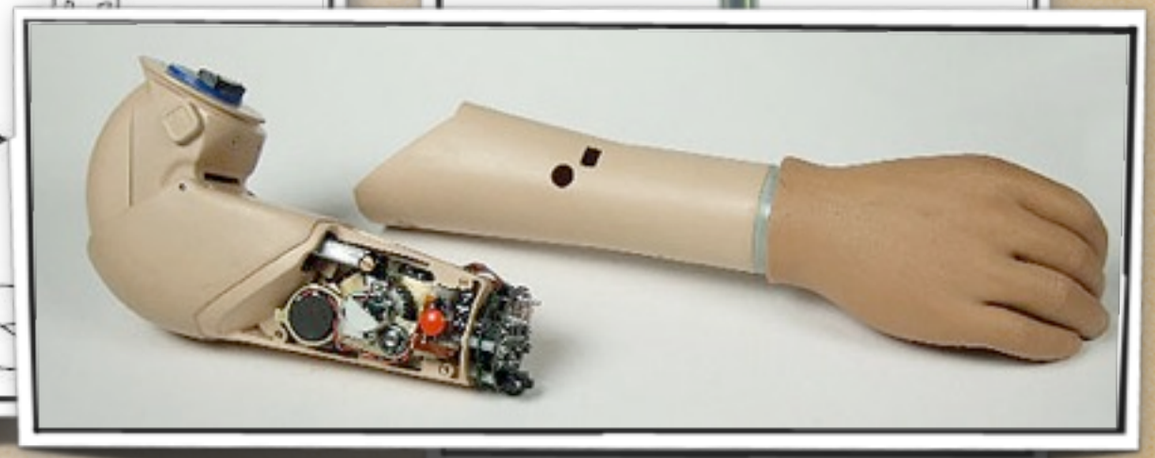


Modern times

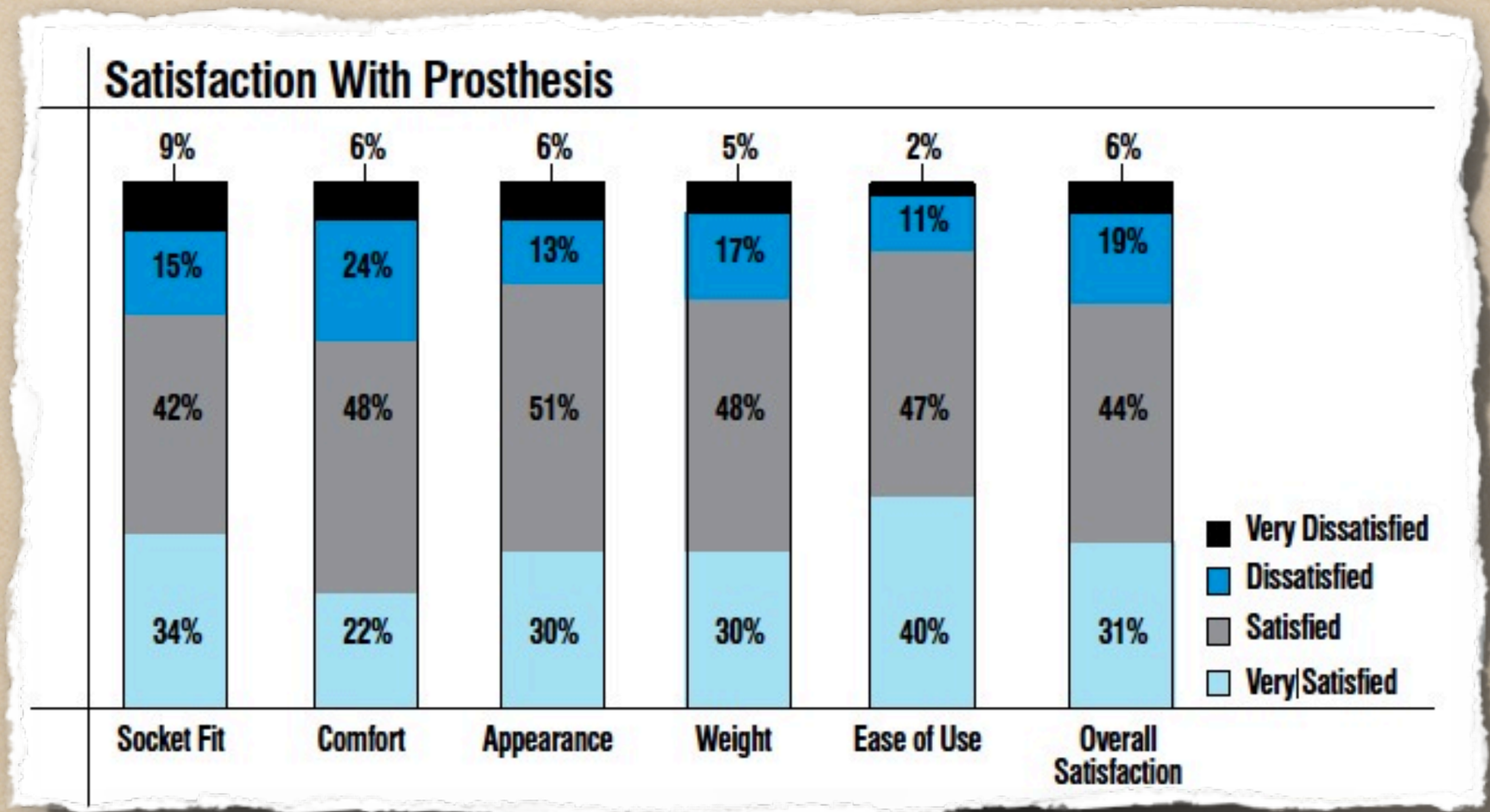
Below Knee



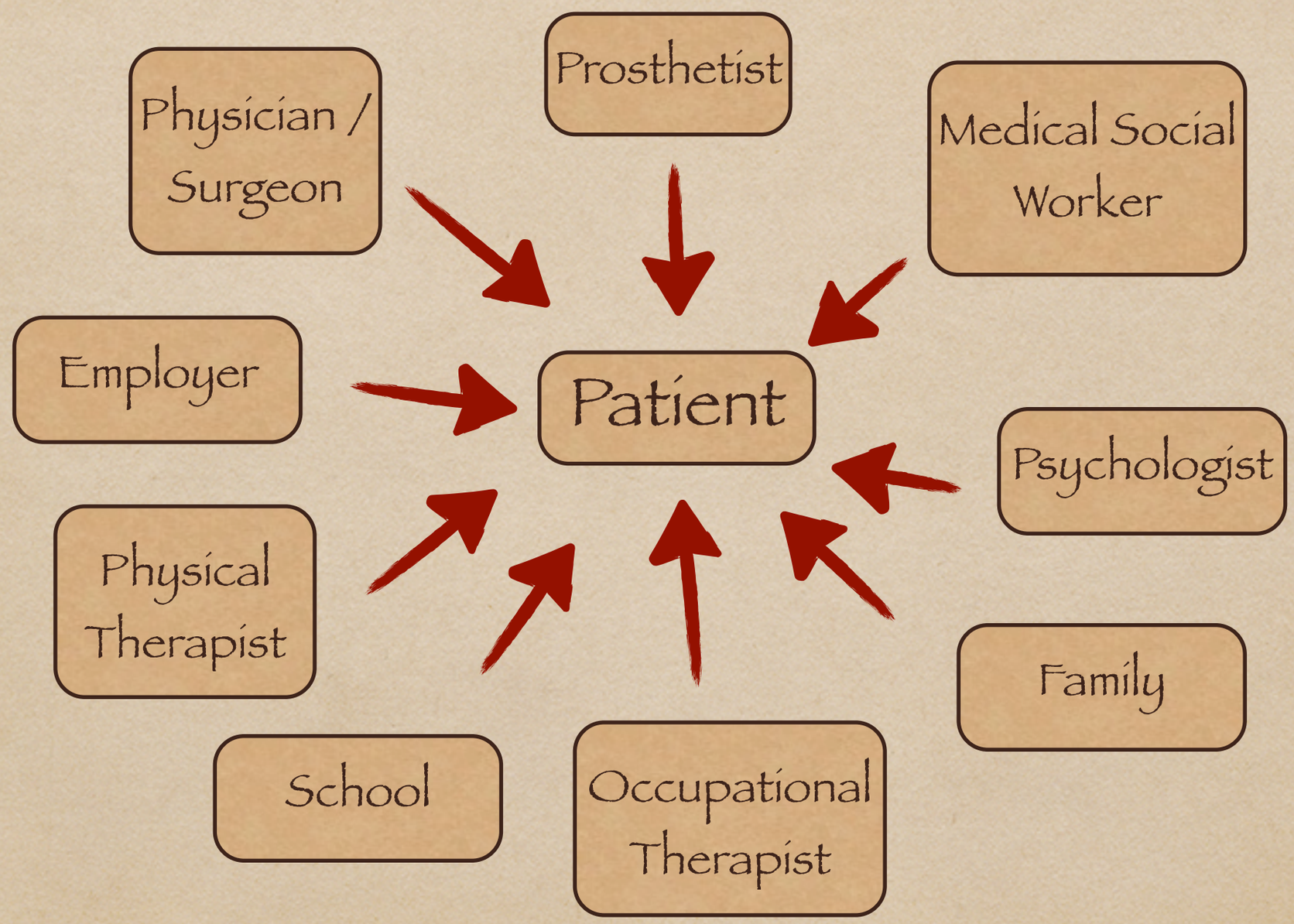




Challenges


Satisfaction With Prosthesis
9%
15%
42%
34%
6%
24%
48%
22%
6%
13%
51%
30%
5%
17%
48%
30%
2%
11%
47%
40%
6%
19%
44%
31%
Socket Fit
Comfort
Appearance
Weight
Ease of Use
Overall Satisfaction
Very Dissatisfied
Dissatisfied
Satisfied
Very Satisfied

Team approach



Case Study


#24: THE BIOTECH STRADIVARIUS
#23: DANDELION RUBBER
#8: THE AIDS VACCINE
#21: THE BLADELESS FAN
The 50 Best Inventions Of the Year
#18: THE $20 KNEE
#16: VERTICAL FARMING
#2: THE TANK-BRED TUNA
#15: THE YIKEBIKE
THE 50 BEST INVENTIONS OF THE YEAR
18
The $20 Knee
Tens of thousands of amputees in the developing world wear an inexpensive prosthetic called the Jaipur Foot. But poor patients who lose a knee joint have few options: a titanium replacement can cost $10,000, and crude models don't work very well. Now a team of Stanford engineering students has designed a knee that's not only dirt cheap—just $20—but also mimics the natural joint's movements. Developed with the Jaipur Foot group, the JaipurKnee is made of self-lubricating, oil-filled nylon and is both flexible and stable, even on irregular terrain. The device is being tested in India; more than 300 people have been fitted so far.
The JaipurKnee comprises five pieces of plastic and four nuts and bolts. It requires no special tools and takes just a few hours to manufacture
19
A Watchdog for Financial Products
The Consumer Financial Protection Agency is still just a bill, but if it winds up getting passed and created—as the Obama Administration has been pushing for—Americans will have a bold new ally every time they sign up for a credit card, write a check or take out a home loan. The goal: to make sure that financial products aren't rigged in favor of the firms selling them and that ordinary people have a shot at wading through complicated contracts and fee structures to really understand what they're getting themselves into.
20
The Electric Microbe
Bacteria have always gotten a bad rap. But we should be thankful for one especially talented microbe, Geobacter, which has tiny hairlike extensions called pili that it uses to generate electricity from mud and wastewater. Professor Derek Lovley and his team of researchers at the University of Massachusetts at Amherst have engineered a strain of Geobacter that's eight times as efficient as other strains at producing power. The next step: creating Geobacter-based fuel cells that can generate cheap, clean electricity.
72
TIME November 23, 2009

Future....