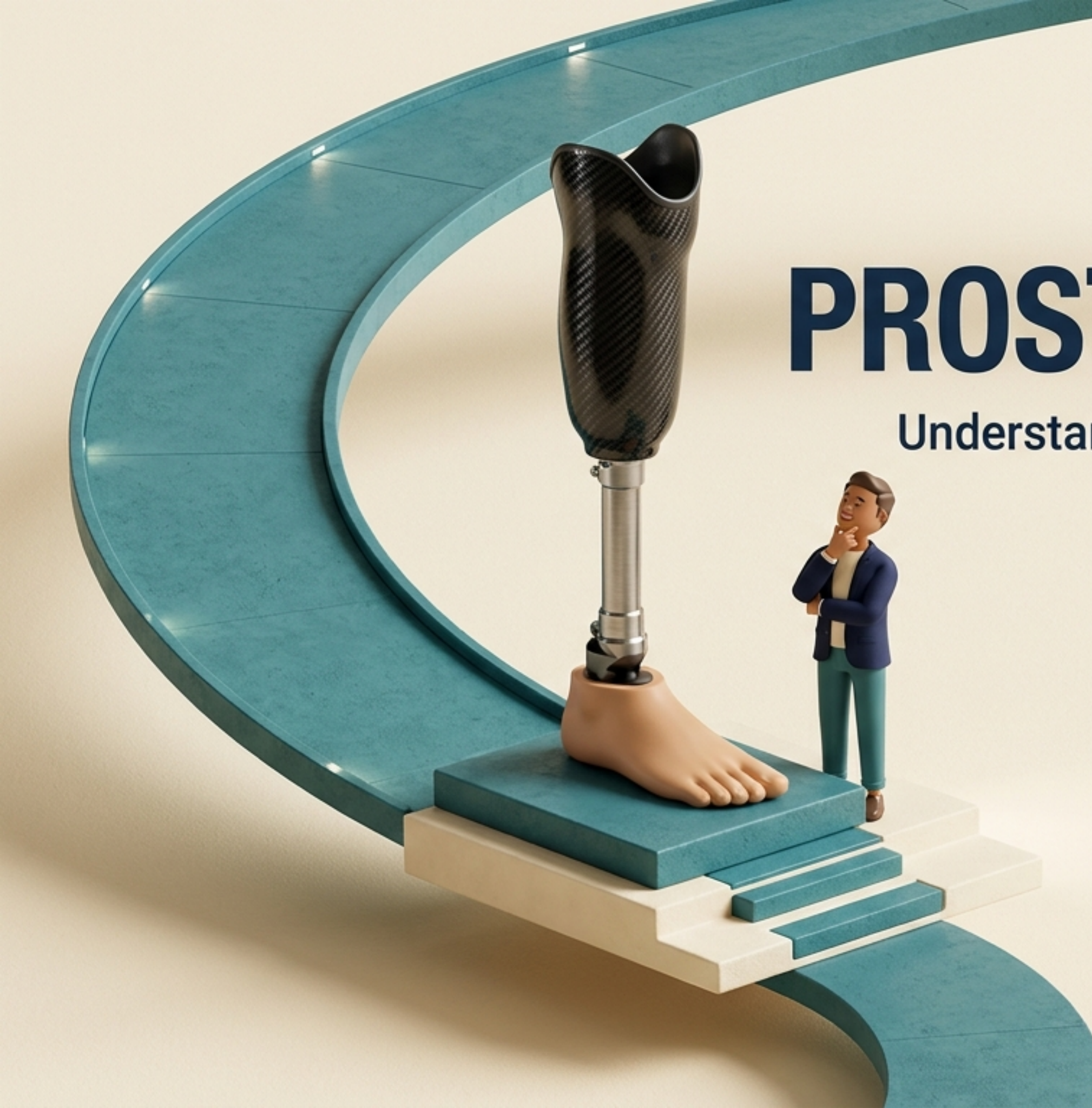




PROSTHETIC ATLAS

Understand your limb. Navigate your choices.

A visual guide to prosthetic technology, everyday care, and better conversations with your care team.

Educational guide. Individual choices and care plans belong with your prosthetic care team.

5.6 Million

A 2024 claims analysis counted 5.6M people in the US with limb loss/difference, a number projected to hold through 2060.

57%

Share of people whose amputation followed a diabetes diagnosis (2024 analysis).

1 in 10

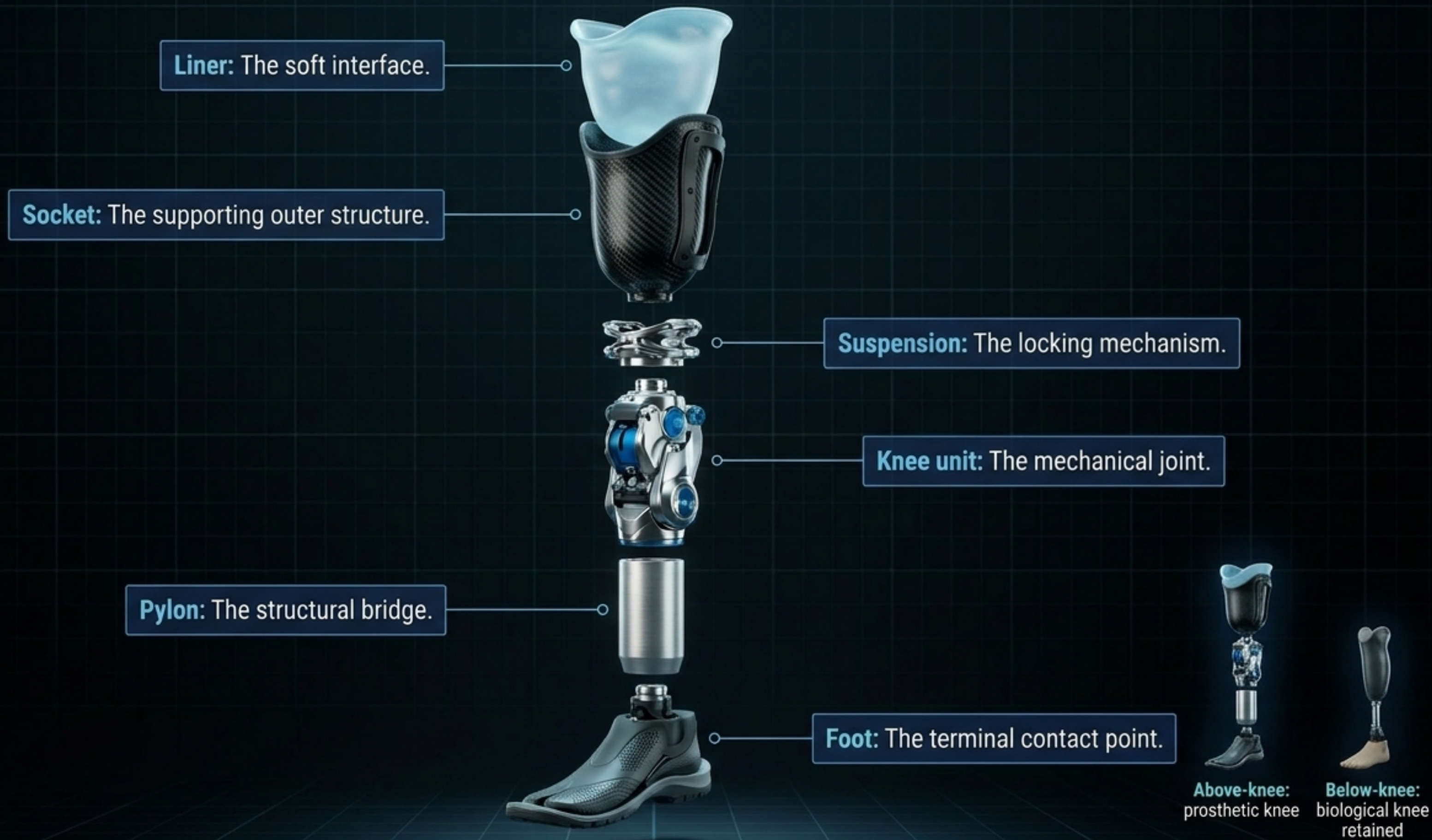
Only 1 in 10 people worldwide who need assistive products have access to them (35-40 million people in need).



Prosthetic Care Access

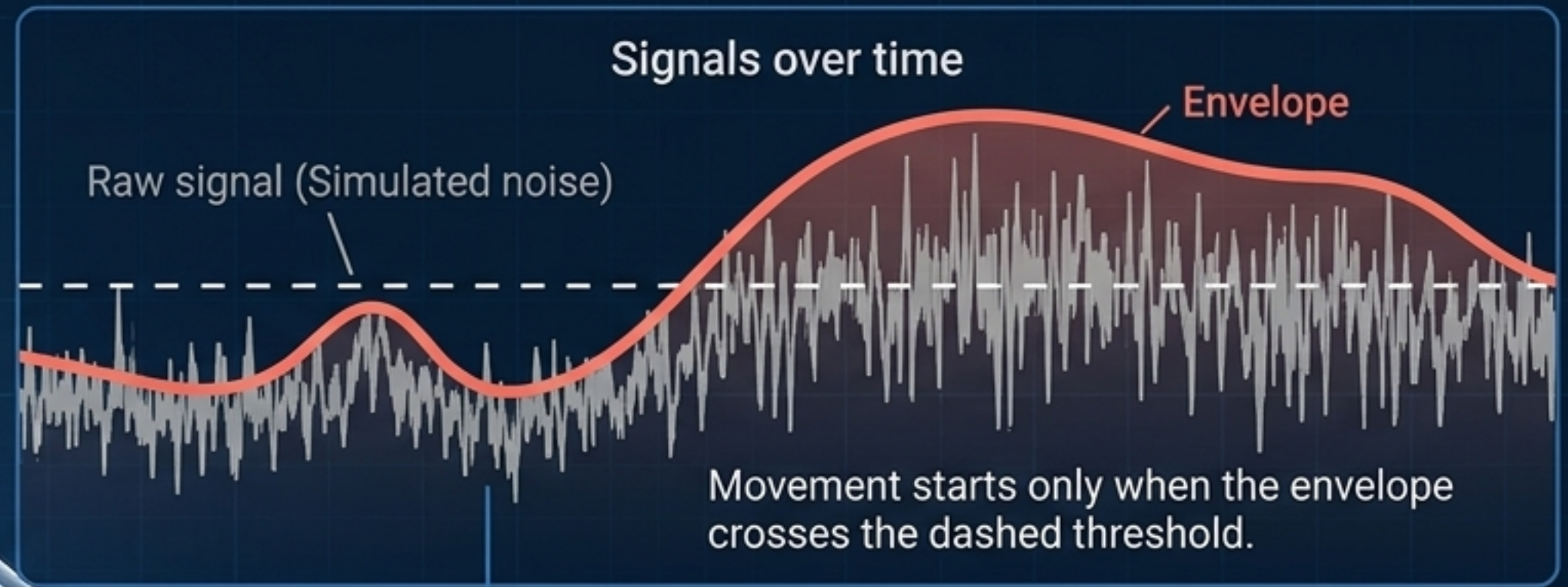
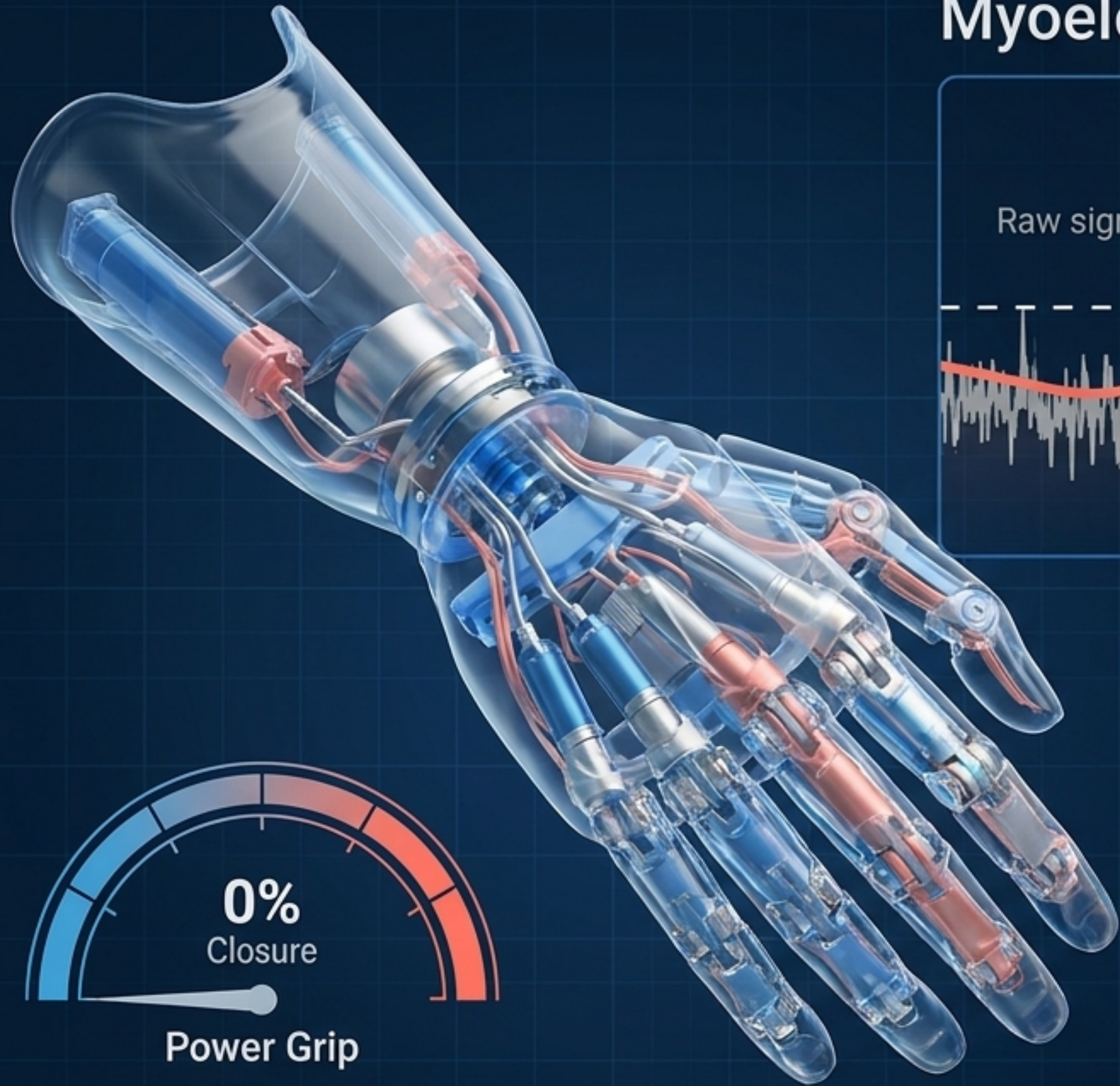
WHO recommends 5 to 10 prosthetists per million people. Typical availability in lower-income countries is 1.

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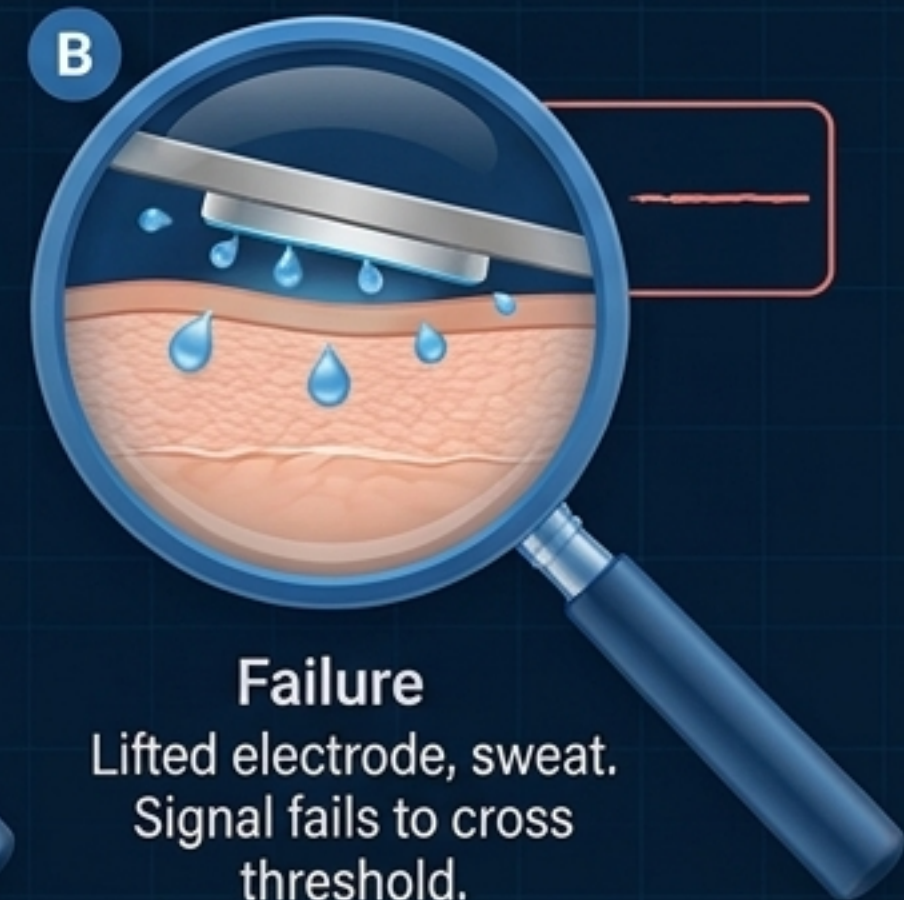
Educational guide. Individual choices and care plans belong with your prosthetic care team.

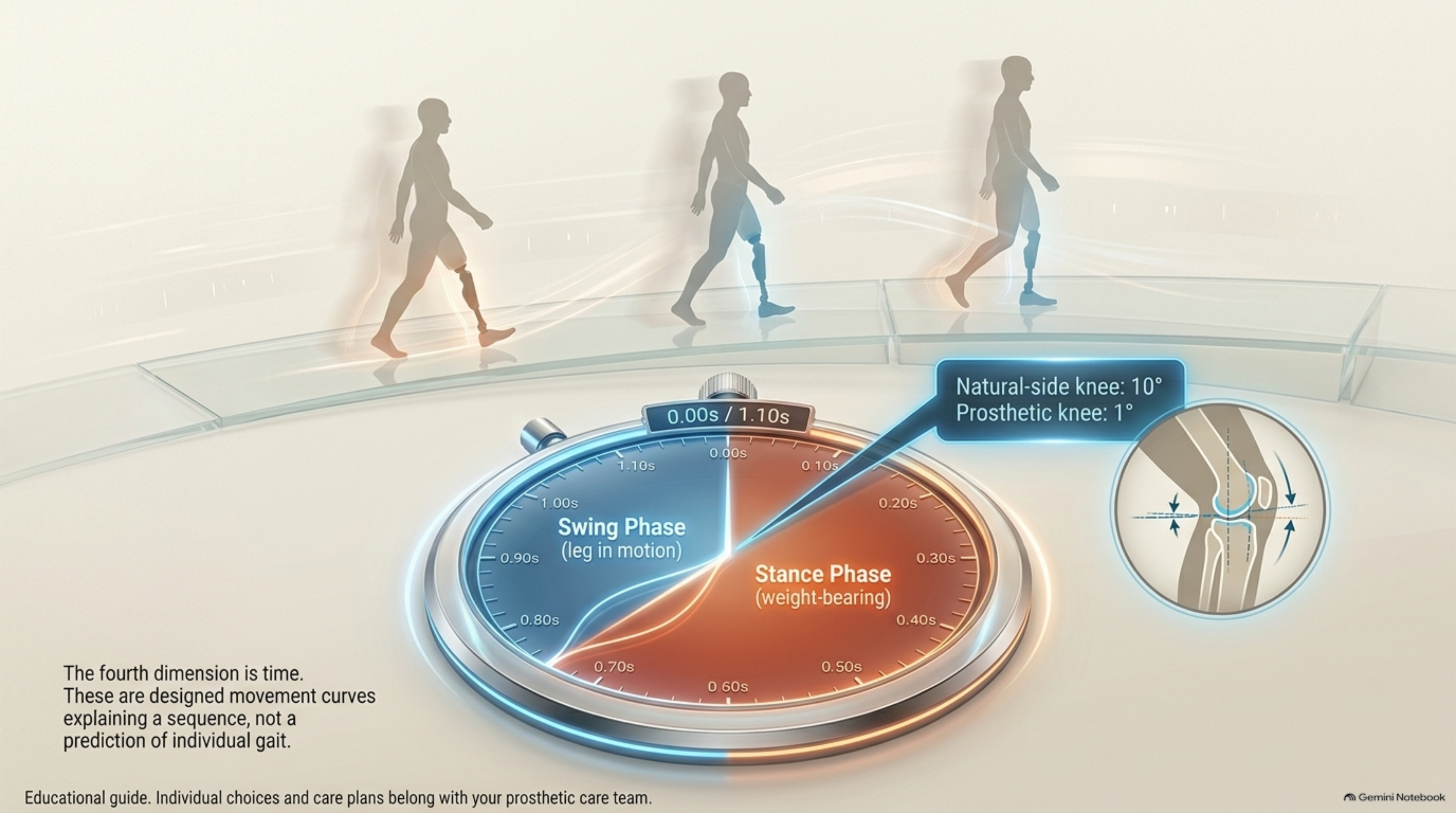
Myoelectric Activation Curve



Power Grip

Co-contraction (sending both signals at once) switches grips





0.00s / 1.10s

Swing Phase
(leg in motion)

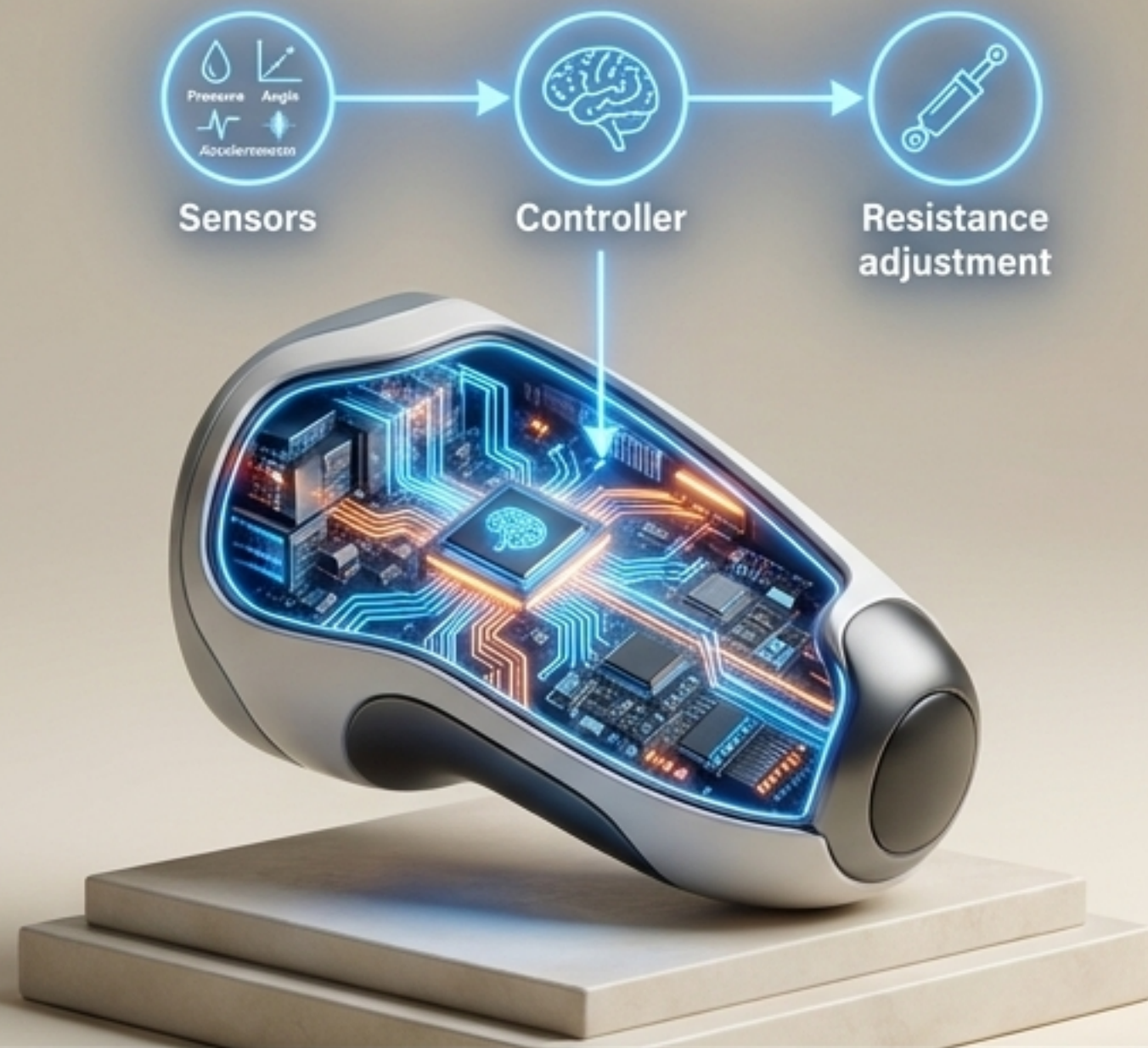
Stance Phase
(weight-bearing)

Natural-side knee: 10°
Prosthetic knee: 1°

The fourth dimension is time.
These are designed movement curves
explaining a sequence, not a
prediction of individual gait.

Knee Prosthetic Types: Microprocessor vs. Mechanical

Dual-axis component matrix



Microprocessor Knee

Sensors → Controller → Resistance adjustment
Actively adjusts to Stance and Swing phases using real-time data.



Mechanical/Locked Knee

Relies on physical momentum, user positioning,
and preset mechanical resistance.

These are generic models to explain concepts, not claims of exact internal engineering or product rankings.

Daily activities
(K1-K4 functional levels)

*Comfort
and fit*

Weight

Maintenance

*Access
and cost*

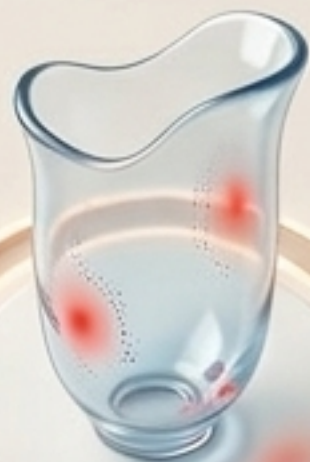


Compare features with your prosthetist.
Every prosthesis is a system of parts; availability and coverage dictate the final build.

Lifeline Curve



Before Fitting
Shrinker controls swelling. Focus on core strength and safe transfers.



First Check Socket
Clear test socket
Clear test socket reveals pressure. Report every hot spot; this is the cheapest moment to change the shape.



First Weeks
Short blocks (1-2 hours). Take off to inspect skin after each block.



Gait Training
Weight shifting, balance, slopes, stairs.



Months 3 to 12
The limb keeps shrinking. Expect sock changes and a replacement socket once volume stabilizes.



Long Term
Yearly review. Sooner for weight change, new sports, or new pain.

The Interface Loupe

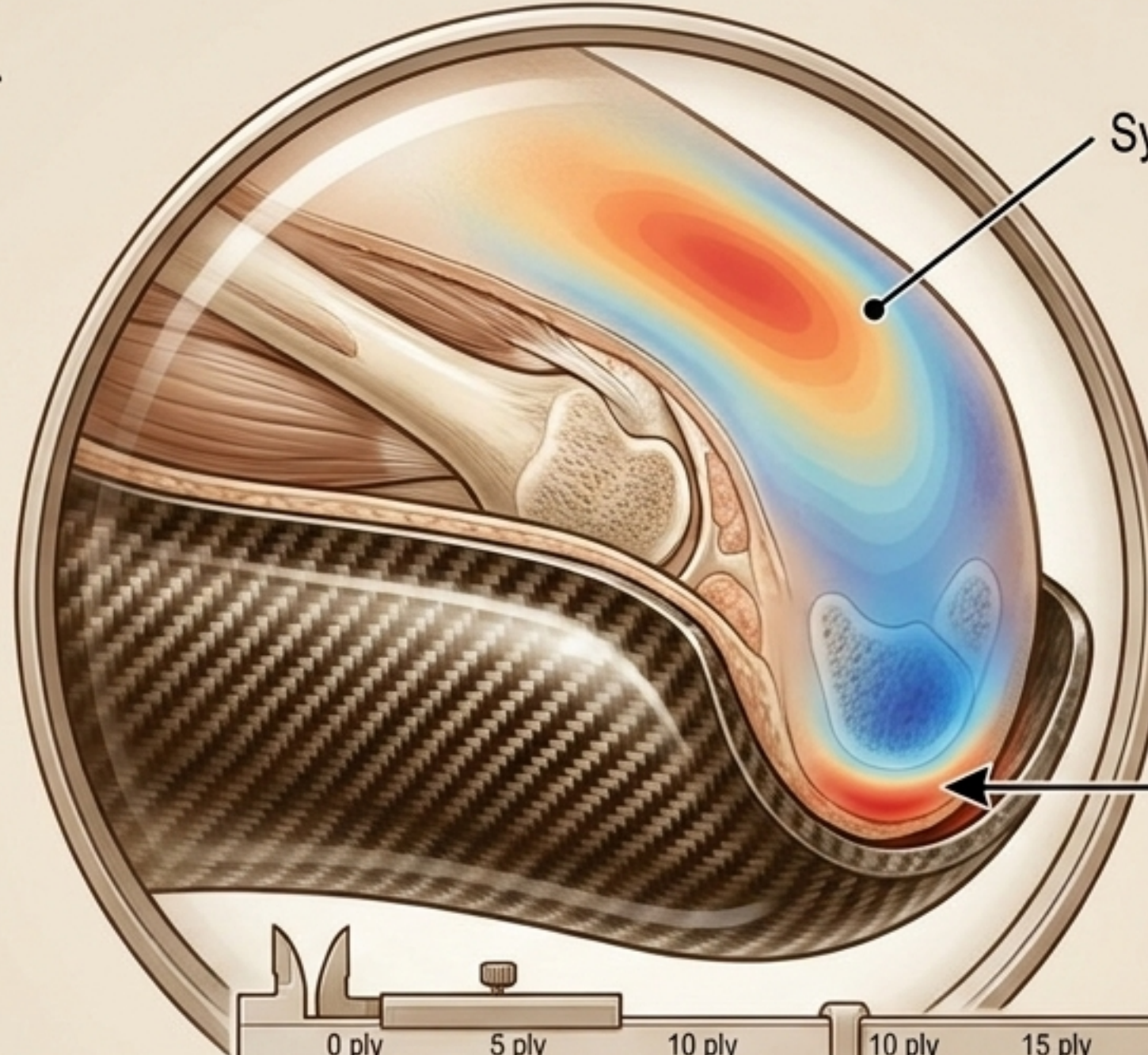
Baseline (7:00 am):

Snug fit, even contact field.
1 layer (Pin-lock).



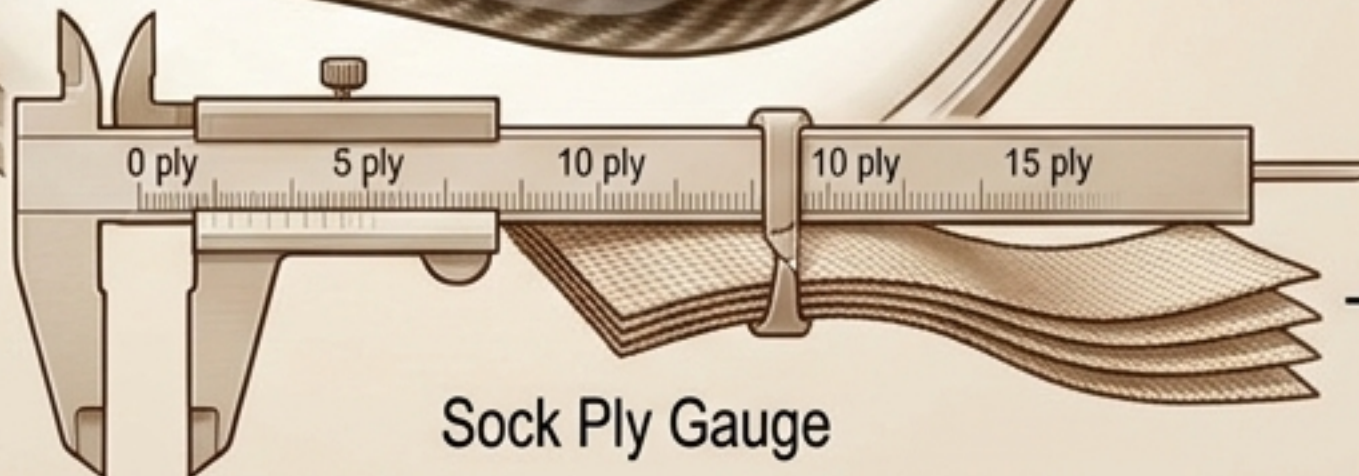
Current (1:00 pm):

Model volume change: -5.3%.



Synthetic Contact Field

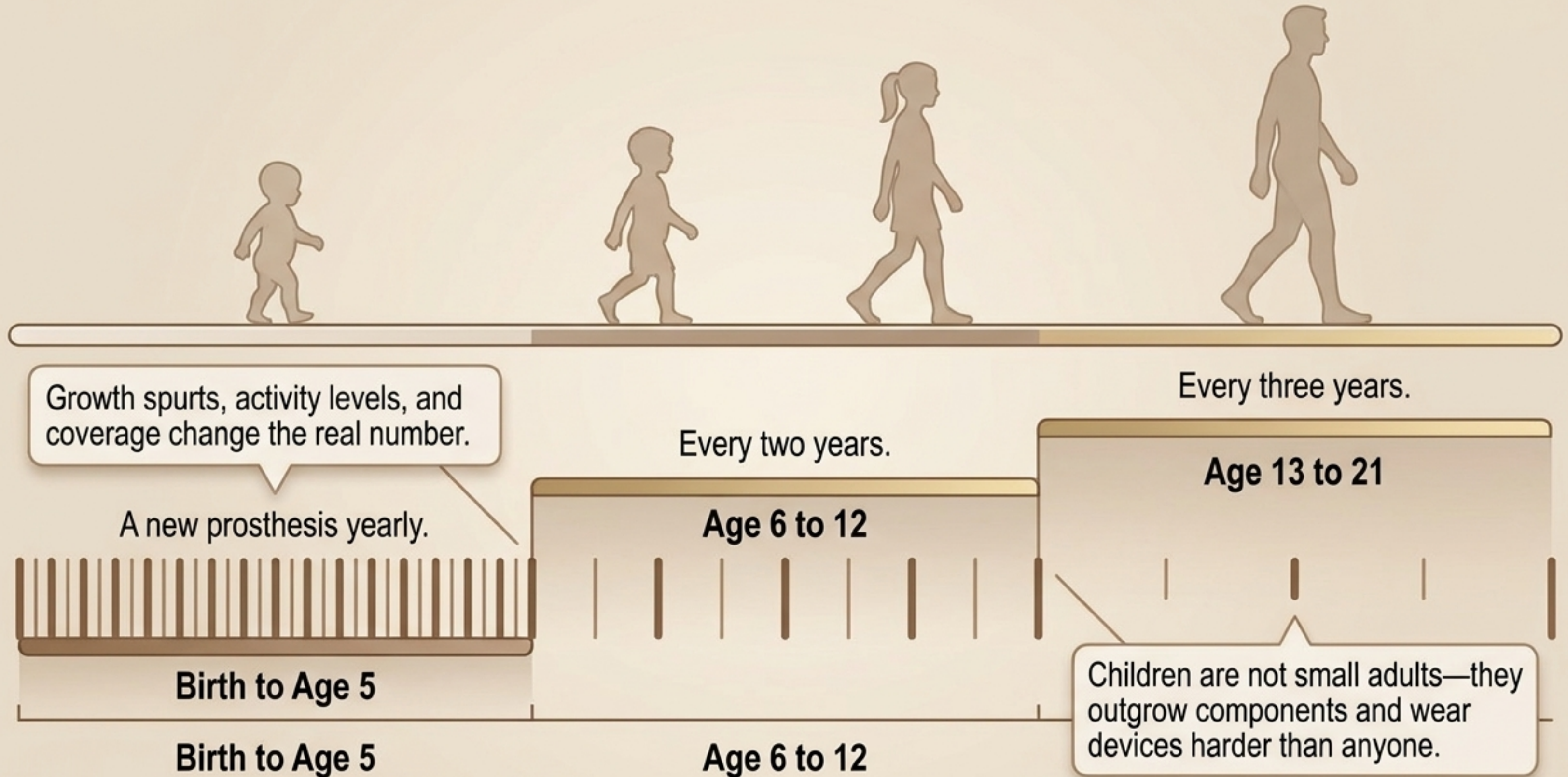
Volume loss shifts the contact field, causing high pressure at the distal end.



Sock Ply Gauge

Fabric layers mechanically fill the -5.3% void to restore the baseline fit.

Prosthetic Replacement Frequency Timeline



Prosthetic Troubleshooting Matrix

	What you notice (The Symptom)	Common Prosthetic Causes	Common User Causes
	 Knee buckling	Alignment shifted, heel height changed, friction loose	Muscle fatigue, weight shift, change in walking speed
	 Excessive rotation	Socket too loose, suspension valve leak	Limb volume loss, sweating, different sock ply needed
	 Socket pistoning (pulling away)	Pin lock failure, torn silicone liner	Significant weight loss, rapid limb shrinkage

Prosthetic Triage: When to Seek Help

Get urgent care now (ER/Emergency)

- Red streaks spreading from a wound (fever/chills); open/smelling wound post-surgery; sudden calf/thigh swelling with chest pain; falls with head strikes; bleeding/discharge at bone-anchored stoma.

Call within a day or two (Prosthetist/Primary Care)

- Redness not fading 20-30 mins after removal; blisters/skin breaks; new pain when wearing; 2+ near-falls; un-clearing microprocessor alarms; dark discoloration at limb end.

Raise at your next visit (Plan it, don't ignore it)

- Steady creep in sock ply; weight change of a few kilos; visible wear on liners/straps; back/hip/sound-side ache; new sports/jobs the setup doesn't suit.

FDA / MHRA / Health Canada

Check databases yearly
for field safety notices
and product recalls.

Total Lifecycle Cost (3-5 years)

Device
(Hardware)

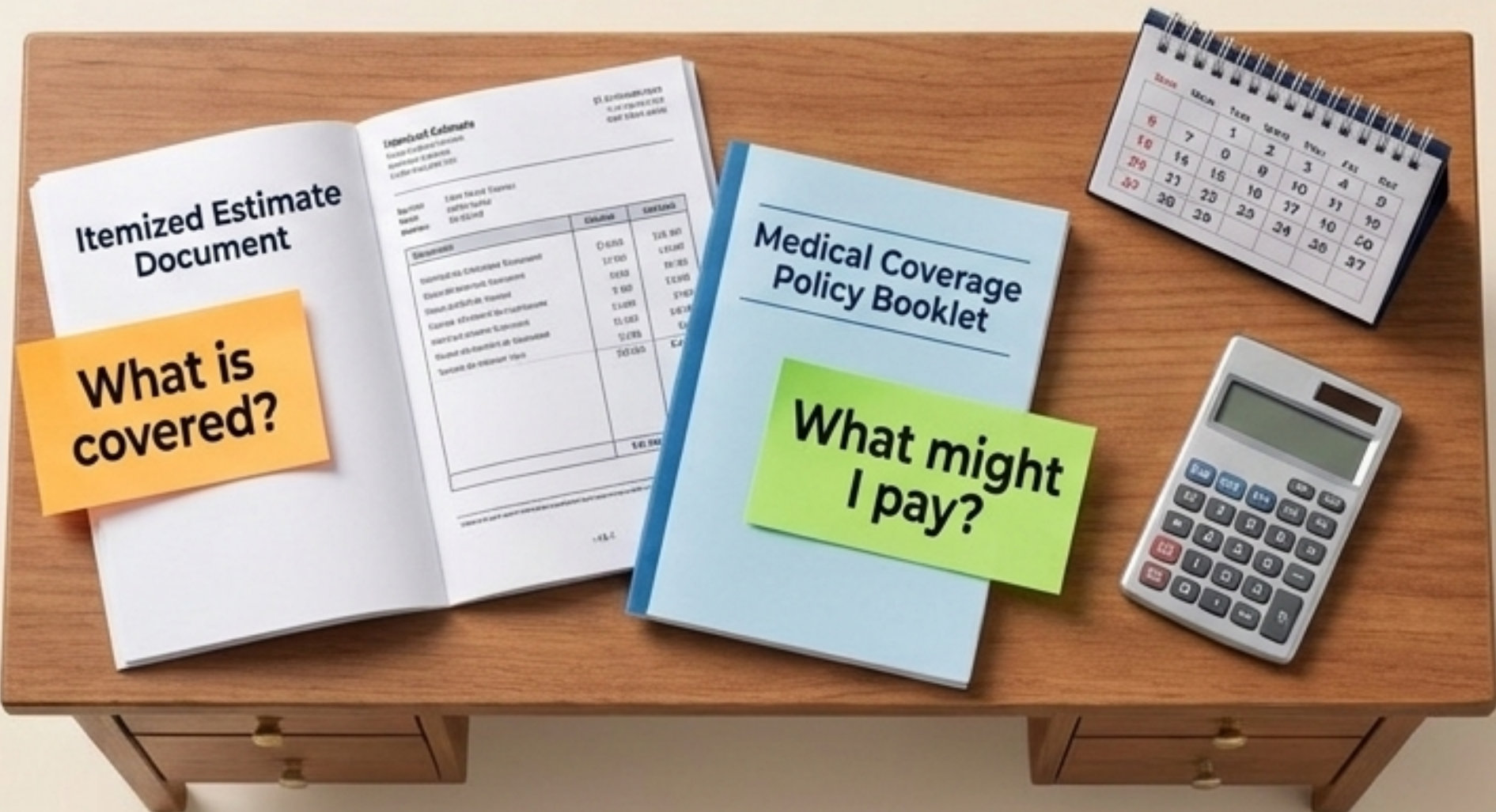
Fitting
(Prosthetist's time)

Follow-up
(Adjustments)

Repairs
(Maintenance)

Replacement
(End of life)

In the US, only about 30% of Medicare beneficiaries who lost a limb in 2016 received a prosthesis within three years.



The Appointment Brief.

☐ My goals

☐ My current components

☐ Changes I have noticed

☐ Photos and notes

☐ Questions to discuss

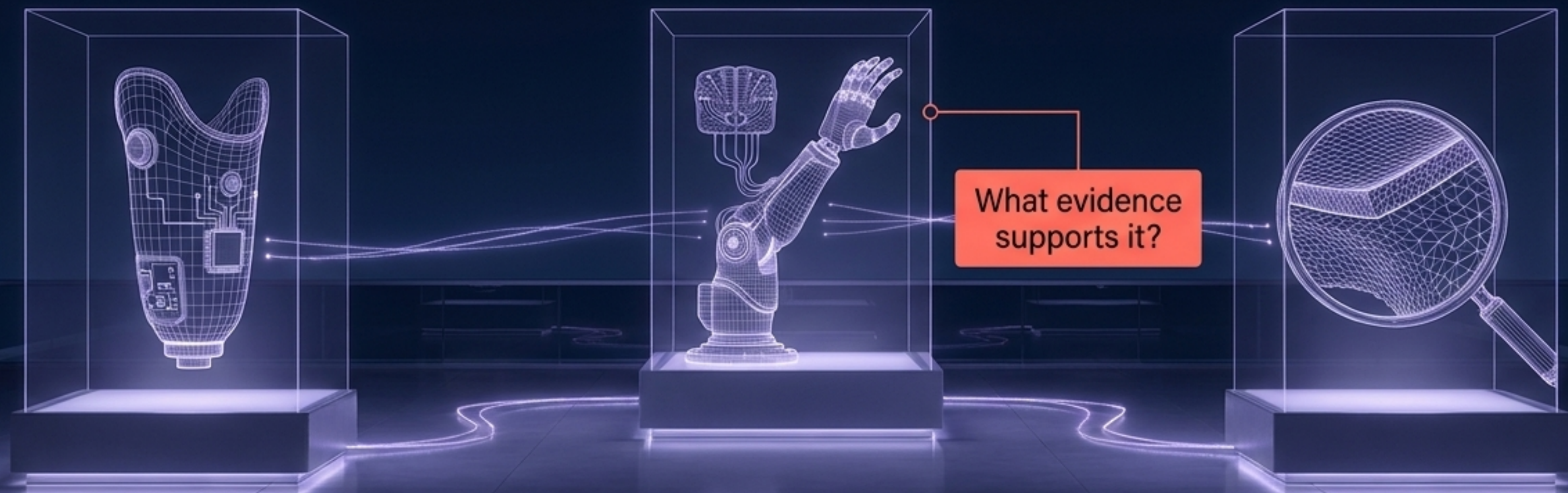
Models to discuss

Changes I have noticed

Questions to ask



**Turn everyday experience into a useful conversation.
Own your next step.**



Five centuries of the artificial limb

Laboratory

Human trials

Early clinical

Established routine care

Explore innovation. Check evidence and availability.
Separate present-day care from future possibilities.

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