



MV Biomechanics

Precision Biomechanics Data for Orthopedic Recovery and Beyond.

Orthopedic care has extraordinary tools in the OR, and only isolated lab-bound snapshots after it. Movement, the outcome that matters most, is still heavily measured by eye.

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Pre-seed · Cambridge, MA
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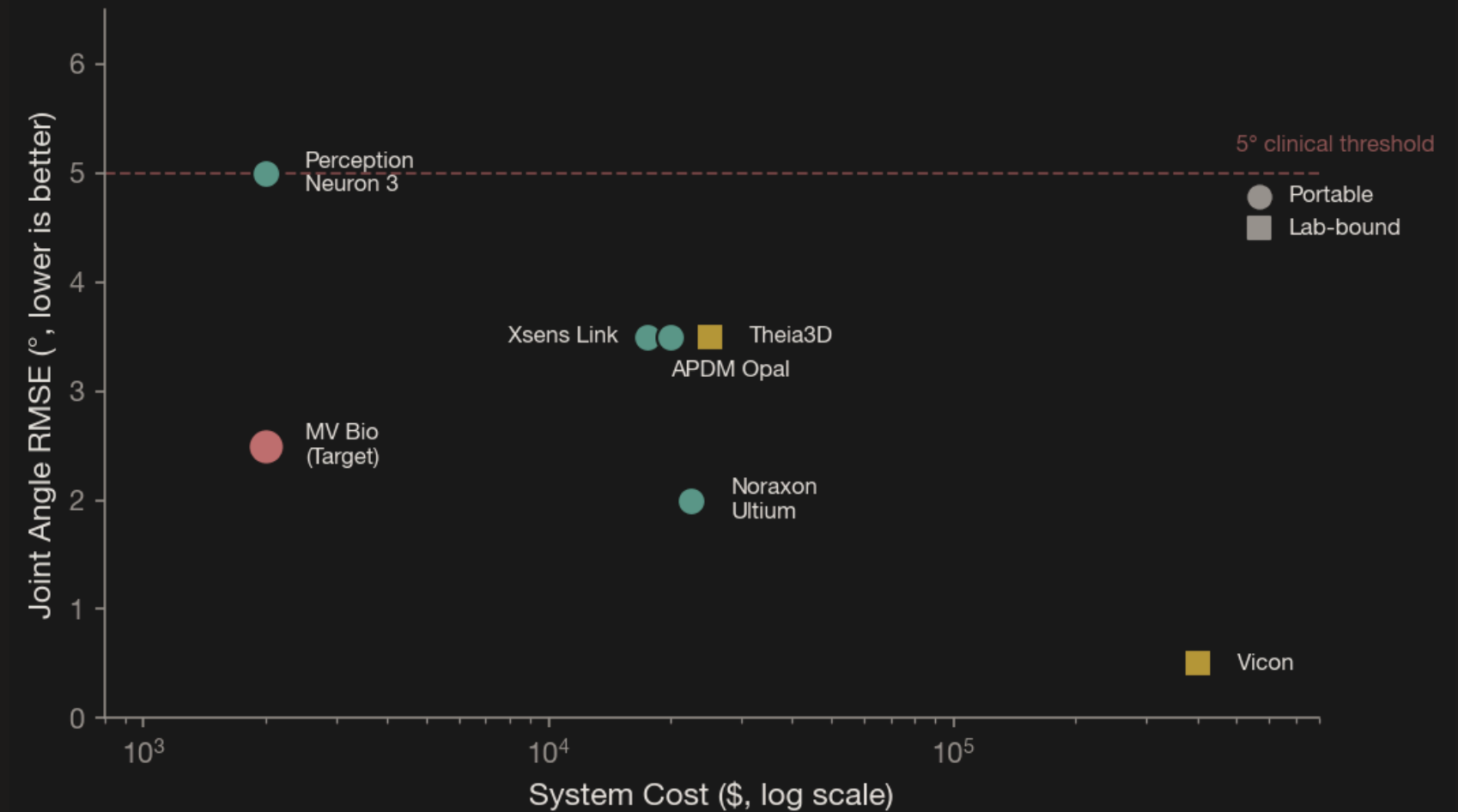
THE PROBLEM



Orthopedic surgery is excellent. Recovery protocols are well-established. Yet, re-injury, chronic pain, and failed recovery still bring patients back through the door.

The gap isn't the surgery. It's what happens after. Compensatory movement patterns that are invisible to the naked eye, and undetectable without MV Biomechanics.

Cost vs. Accuracy: The Opportunity Space



01

Majority of patients don't complete their recovery

Up to 70% of post-surgical patients never complete their prescribed PT program. This leaves recovery incomplete, compensatory patterns unchecked, and re-injury more probable.

02

Subjective assessment is the standard of care

Clinical decisions across MSK surgery and rehabilitation rely heavily on visual observation & self report. There is no accessible objective biomechanical movement standard.

03

Gold-standard motion capture is inaccessible

As the chart shows, clinical grade systems sit at the top-right at \$250K+, lab-only, 45-min setup. Fewer than 1% of orthopedic patients ever access them. The accessibility doesn't exist.

04

MV fills the clinical precision gap at accessible cost

Other mo-cap solutions cluster in the center of the chart, still too a high cost. MV targets the empty bottom-left: clinical-grade accuracy at a fraction of the price. That is our market.

OUR SOLUTION

A wearable system that measures, models, and guides human movement — at clinical precision, in daily life.

Initial focus: lower-body mechanics — squat, hinge, lunge, gait. Same platform is expandable to the full kinetic chain.



MEASURE

FPGA-synchronized IMU array — full lower-body kinematics at clinical precision, in a garment you'd actually wear.

MODEL

Custom built movement optimizer simulates your personalized "gold standard model", that progresses as you improve in real-time

GUIDE

Sensor-to-language AI translates kinematics into plain-language insights for clinicians, PTs, and patients.





HARDWARE MOAT

Precision is architectural.

FPGA-driven parallel sensor bus

<10 μ s inter-sensor synchronization to minimize timing mismatch errors

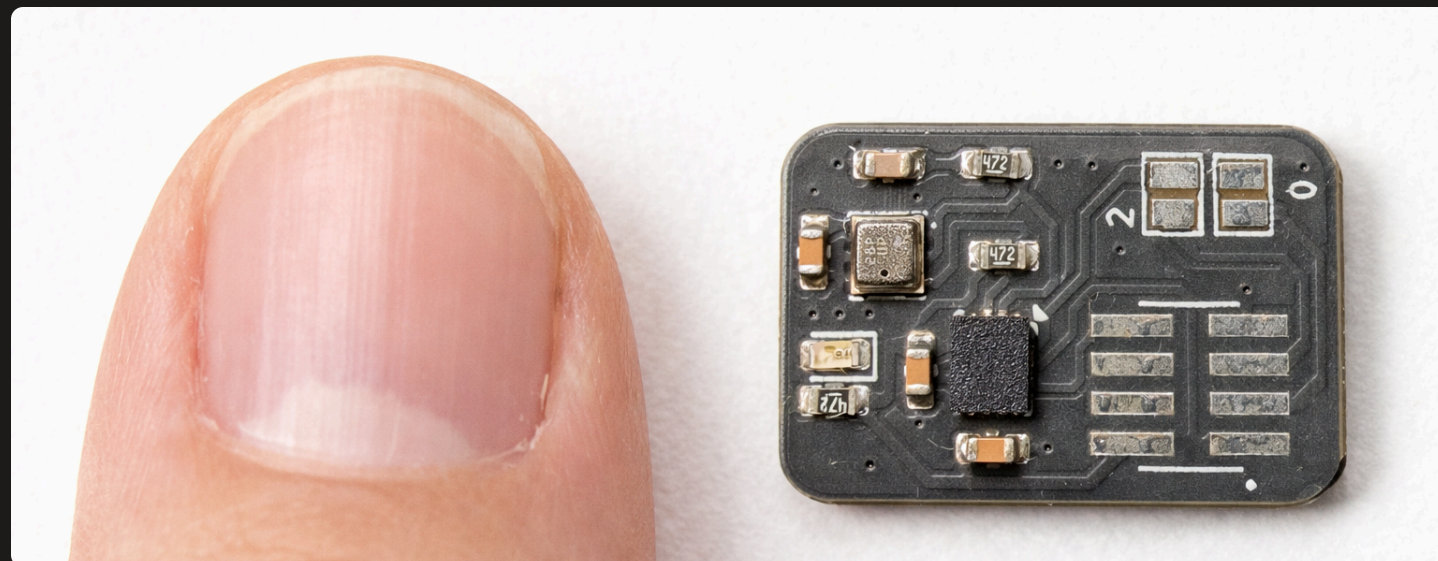
Target specification

<2.5° RMSE accuracy · >300 Hz sampling · <\$2,000/system — in a clinical-grade garment engineered for daily durability

Architecture

12+ IMUs · STM32 host MCU · embedded DSP and sensor fusion

PATENT PENDING



INTELLIGENCE MOAT

From sensor data to clinical language.

YOUR DIGITAL TWIN

Actual movement data from IMUs

COMPARE



YOUR GOLD STANDARD

Your optimal biomechanics model

GUIDE



DIGITAL HEALTH ASSISTANT

LLM-powered guidance & plans

PATENT PENDING

End-to-end, first-principles co-design from silicon to software. That's what makes the stack hard to copy.





One Platform, three markets. We enter through clinical.

	MARKET	USE CASE	REVENUE MODEL
CORE	Orthopedic surgeons & hospitals	Post-surgical return-to-sport decisions	Per-assessment fee, CPT billing
ADJACENT	Sports teams & performance coaches	Athlete injury prevention & performance	Subscription / team contract
EXPANSION	Employers & insurers; DTC	Occupational ergonomics & worker injury prevention; Personal fitness & wellness	Enterprise Subscription; DTC Hardware Purchase + Subscription

Beachhead: ACL-R return to sport

- ▲ High-stakes clinical decision, mechanically well-defined — directly aligned with our lower body platform
- ▲ Reimbursement pathways for remote MSK monitoring already exists, no new billing infrastructure needed
- ▲ What we're looking for: clinical co-development partners to shape and validate the platform on real patients
- ▲ Expansion on same hardware: post-TKA → hip arthroplasty → fall risk → injury prevention

TRACTION

Working prototype.
Strong foundation.

HARDWARE

Working desktop prototype

Dev-board central + custom peripheral PCBs ·
lower-body suit v1 in fabrication

SOFTWARE

Full R&D software stack

Acquisition, configuration, logging & analysis
pipeline

INTELLECTUAL PROPERTY

2 provisional patents filed

Hardware & software · 3 technical white papers
published

NEXT MILESTONE

Product Launch (research preview) —
August 2026

Public launch of validated wearable
biomechanics platform

ROADMAP

From prototype to clinical
deployment.

-
- Aug 2026**
Research preview launch
Validated $<2.5^\circ$ RMSE · full lower-body
kinematic capture · gold standard integrated
 - Aug '26 – Feb '27**
Clinical pilots
Dataset collection · UX refinement with
clinical partners
 - Q1–Q2 2027**
510(k) pre-submission
Further clinical validation · regulatory
pathway initiated
 - H2 2027**
Commercial pilots
Expansion to additional market · DTC

BUSINESS MODEL

Durable revenue across the
care pathway.

CORE CLINICAL MARKET

Hardware + Software

Per-patient monthly subscription, reimbursable
through existing insurance pathways for remote
musculoskeletal monitoring

ENTERPRISE

Research & data licenses

Universities, pro sports organizations, robotics
data buyers · enterprise subscription

DTC · FUTURE

Consumer health layer

Hardware purchase + subscription · built on
validated clinical infrastructure

TEAM

Hardware, Biomechanics, and AI — under one roof.

Alexandros Zografos — Co-Founder & CEO

Dual M.S. in Bioengineering from Northeastern & Kinesiology/Biomechanics from Aristotle University Thessaloniki. Expertise spanning sports science, rehabilitation, biomechanics, medical device design, and hardware validation.



Nikolay Popov — Co-Founder & CTO

M.S. Electrical & Computer Engineering, B.S Human Physiology Boston University. Expertise in embedded firmware, FPGA integration, real time signal processing, & custom PCB design. Background in biomechanical performance optimization



Valentin Jordanov — Co-Founder & Chief Scientist

Ph.D. Nuclear Engineering, University of Michigan · IEEE Life Fellow. 10 patents · 2,000+ citations · 2× R&D 100 Awards · 40 years across NASA, nuclear safeguards, medical imaging



Three people, one platform.. We co-design from first principles and leverage AI across R&D and operations.

OUR ASK

- 1 Pre-seed capital**
Fund 6+ months of full-time development, clinical pilots, and our August 2026 research preview. Open on round structure and strategic partnerships.
- 2 Clinical co-development partners**
Surgeons, PTs, and sports medicine clinicians who want to shape the platform. Early access, influence the product, build on pilot data together.
- 3 Tailored collaborations**
Research partnerships, data agreements, institutional relationships — we are open and flexible at this stage.

We're here to build this with you, not just to pitch you.

Find us after.

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