



Case Study:

# Reversing Biological Aging in a High Functioning Executive

Elite Vita's Precision Health Algorithm

ELITE VITA POLYCLINIC - DUBAI  
OBSERVATION PERIOD: JANUARY 2025 - JULY 2025





# Case Summary

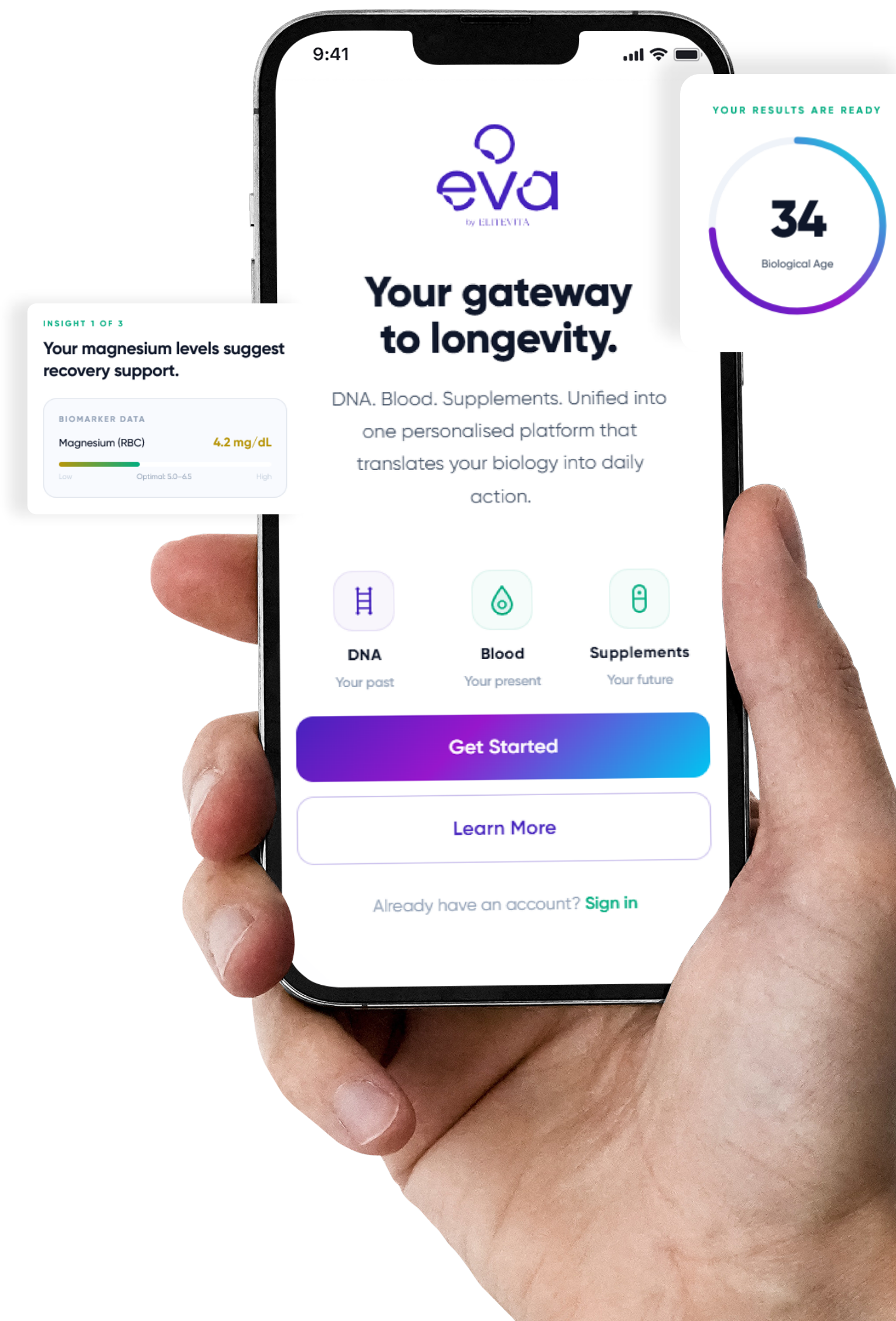
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A 44-year-old executive completed a six-month precision health program guided by Elite Vita's Precision Health Algorithm, which also powers the **EVA app**.

The program integrates:

-  Comprehensive biomarker testing (72 health markers)
-  Biological age calculation using PhenoAge
-  Genetic analysis (>200 million variants)
-  Personalized nutrition and targeted supplementation

After six months, multiple health markers improved and the patient's **biological age decreased significantly**.

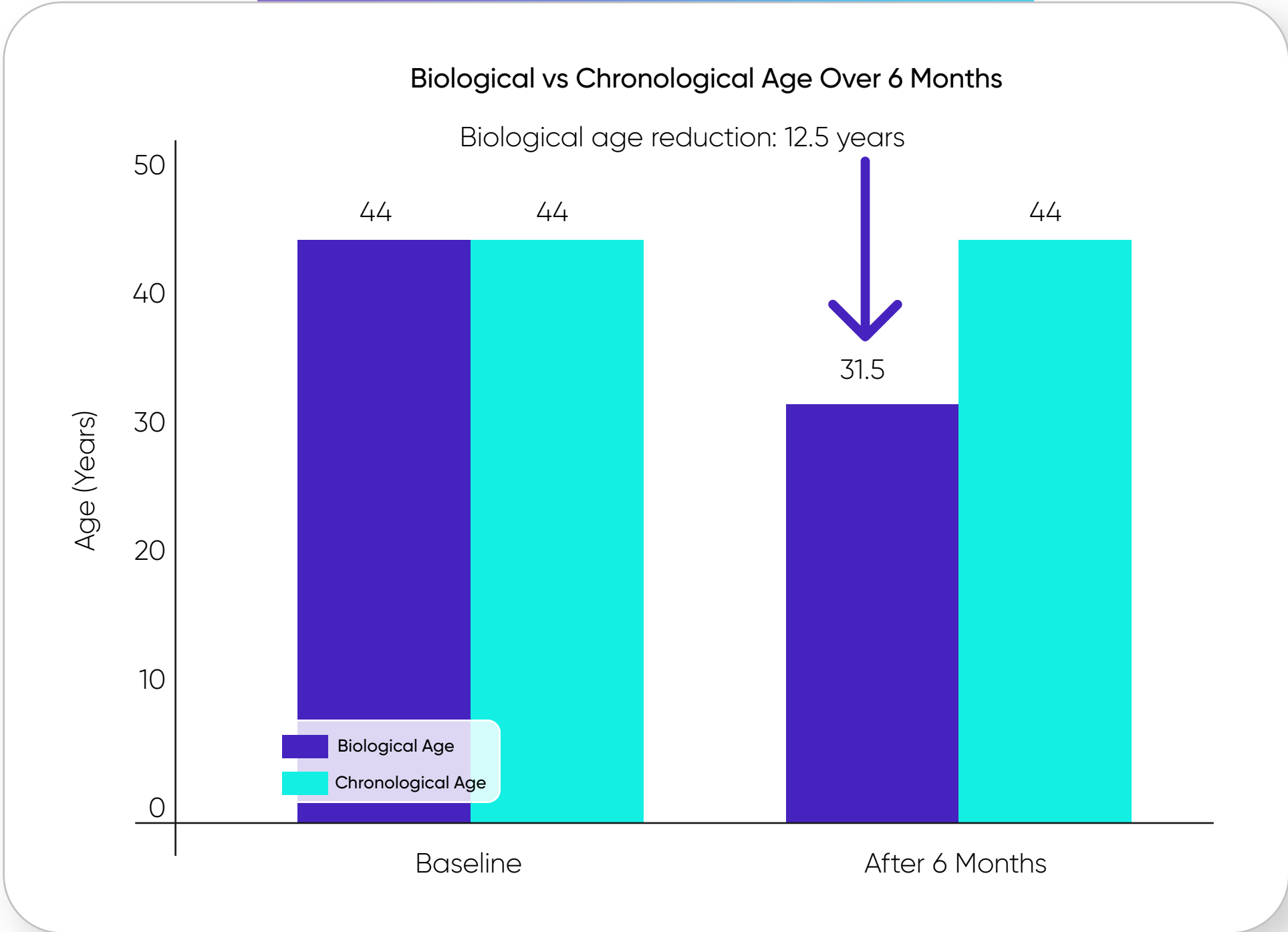


# Biological Age Change

| Metric            | Baseline | After 6 Months |
|-------------------|----------|----------------|
| Chronological Age | 44 years | 44 years       |
| Biological Age    | 44 years | 31.5 years     |

## Biological age reduction: 12.5 years

This indicates a significant shift in the patient’s overall physiological health and aging trajectory.



# The Elite Vita Precision Health Algorithm

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The Elite Vita algorithm identifies early biological drivers of aging and disease risk. It integrates three layers of health data and forms the clinical backbone of the EVA app.

## Biomarker Analysis

More than 72 biomarkers are analyzed across major physiological systems:

- Cardiovascular health
- Inflammation
- Metabolic function
- Liver and kidney health
- Nutrient status
- Methylation pathways

These markers detect biological changes long before disease symptoms appear.

## Genetic Analysis

DNA analysis was performed using the OmicsEdge platform, evaluating over 200 million + genetic variants. OmicsEdge is a clinically validated direct-to-consumer DNA analysis platform featured in the journal Nature.

The analysis identified several biologically relevant traits.



## Methylation-related variants

- **MTHFR variant** → reduced methylation efficiency
- **CUBN variant** → altered vitamin B12 metabolism
- **PEMT variant** → increased need for methyl donors

These variants contributed to elevated homocysteine levels and guided targeted nutritional support.

## Metabolic phenotype

Genetic analysis revealed a TCF7L2 “hunter-gatherer” variant, associated with:

- A lower-carbohydrate metabolic phenotype
- Slightly increased risk of type 2 diabetes with aging

Based on this, a lower-carbohydrate dietary pattern with adequate protein and healthy fats was recommended.

## Polygenic Risk Scores

Polygenic risk analysis showed typical population-level risk for:

- Type 2 diabetes
- Coronary artery disease
- Alzheimer's disease

Preventive strategies therefore focused on protecting arterial health and cognitive function early.

## Biological Age Modeling

Biological age was calculated using the **PhenoAge algorithm**, which estimates physiological aging based on biomarkers associated with mortality risk.



# Baseline Health Profile

Initial testing revealed early biological signals associated with long-term cardiovascular risk.

## Key Biomarkers at Baseline

| Marker        | Baseline Value | Meaning                                        |
|---------------|----------------|------------------------------------------------|
| ApoB          | 90 mg/dL       | Elevated artery-damaging cholesterol particles |
| hsCRP         | 1.75 mg/L      | Chronic low-grade inflammation                 |
| Homocysteine  | 17.3 μmol/L    | Impaired methylation and vascular stress       |
| AST           | 58 U/L         | Liver stress                                   |
| LDL-C         | 129 mg/dL      | Borderline elevated                            |
| Triglycerides | 53 mg/dL       | Healthy level                                  |

Although these values may appear “normal” on conventional lab reports, they still reflect biological processes that influence lifetime disease risk.



# How Artery Disease Develops Over Time

04

Heart attacks and strokes rarely occur suddenly.

They usually result from **atherosclerosis**, a process where cholesterol particles slowly accumulate in artery walls over many years.

The main driver of this process is **ApoB-containing particles**.

Each ApoB particle represents a cholesterol particle capable of entering the artery wall and forming plaque.

At age **44**, an ApoB level of **90 mg/dL** represents meaningful cumulative exposure to these particles.

Reducing ApoB to **62 mg/dL** significantly lowers the number of plaque-forming particles circulating in the bloodstream.

Over time, this reduction can meaningfully lower **lifetime risk of heart attack and stroke**.



# Precision Intervention Plan

05

The Elite Vita algorithm generated a targeted intervention plan based on biomarker data and genetic findings.

## Nutrition

Because of the TCF7L2 hunter-gatherer metabolic variant, a lower-carbohydrate dietary pattern was recommended:

- Reduced refined carbohydrates
- Adequate protein intake
- Increased fiber intake
- Healthy fats including omega-3

This supports stable blood sugar and metabolic health.



# Precision Supplementation Strategy

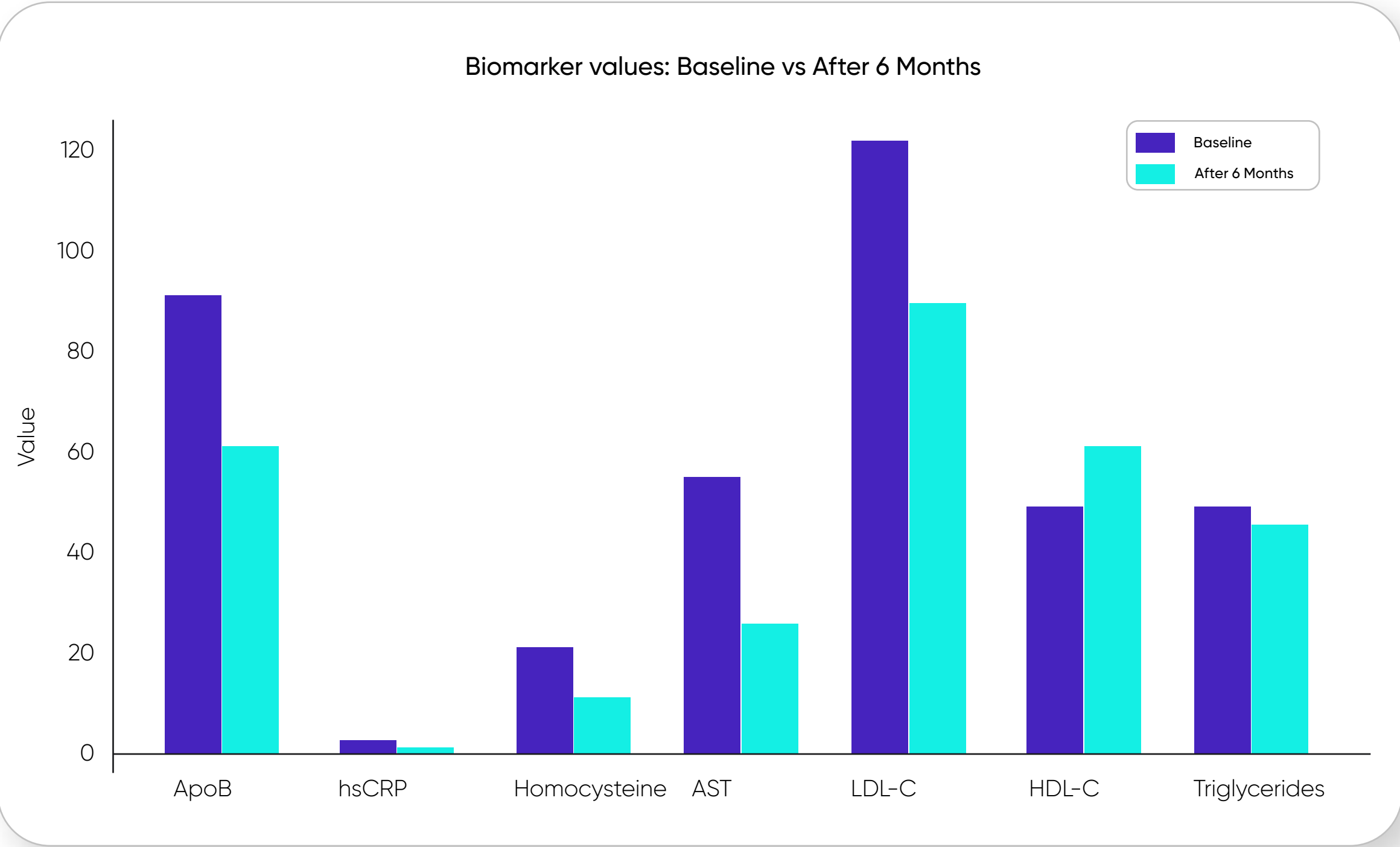
Targeted supplementation addressed the biological pathways identified through testing.

## Supplement Interventions

| Target Pathway             | Intervention                                                                                                        | Intervention                                                           | Expected Health Benefit                                                          |
|----------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Methylation support        | <ul style="list-style-type: none"><li>• Methylated B complex</li><li>• Methylfolate(5-mthf)</li><li>• TMG</li></ul> | Correct elevated homocysteine linked to MTHFR methylation inefficiency | Improved vascular health, DNA repair, and neurological protection                |
| Cardiovascular protection  | <ul style="list-style-type: none"><li>• Optimal EPA + DHA omega-3</li><li>• Berberine</li></ul>                     | Reduce ApoB particles and improve lipid metabolism                     | Lower lifetime risk of heart attack and stroke                                   |
| Vitamin D optimization     | <ul style="list-style-type: none"><li>• Vitamin K2D</li></ul>                                                       | Improve vitamin D metabolism and calcium regulation                    | Bone health, immune function, and vascular protection                            |
| Trace mineral balance      | <ul style="list-style-type: none"><li>• Zinc • Copper</li></ul>                                                     | Optimize zinc status while preventing copper deficiency                | Immune function, antioxidant defense, and hormonal balance                       |
| Antioxidant support        | <ul style="list-style-type: none"><li>• Vitamin C</li></ul>                                                         | Address genetically increased vitamin C requirement                    | Improved immune resilience, collagen production, and oxidative stress protection |
| Cellular and liver support | <ul style="list-style-type: none"><li>• N-acetyl cysteine (NAC)</li></ul>                                           | Support detoxification pathways and antioxidant systems                | Improved liver health and cellular resilience                                    |
| Nutrient balance           | <ul style="list-style-type: none"><li>• Magnesium glycinate</li></ul>                                               | Address common magnesium insufficiency                                 | Better metabolic health, muscle recovery, and nervous system balance             |

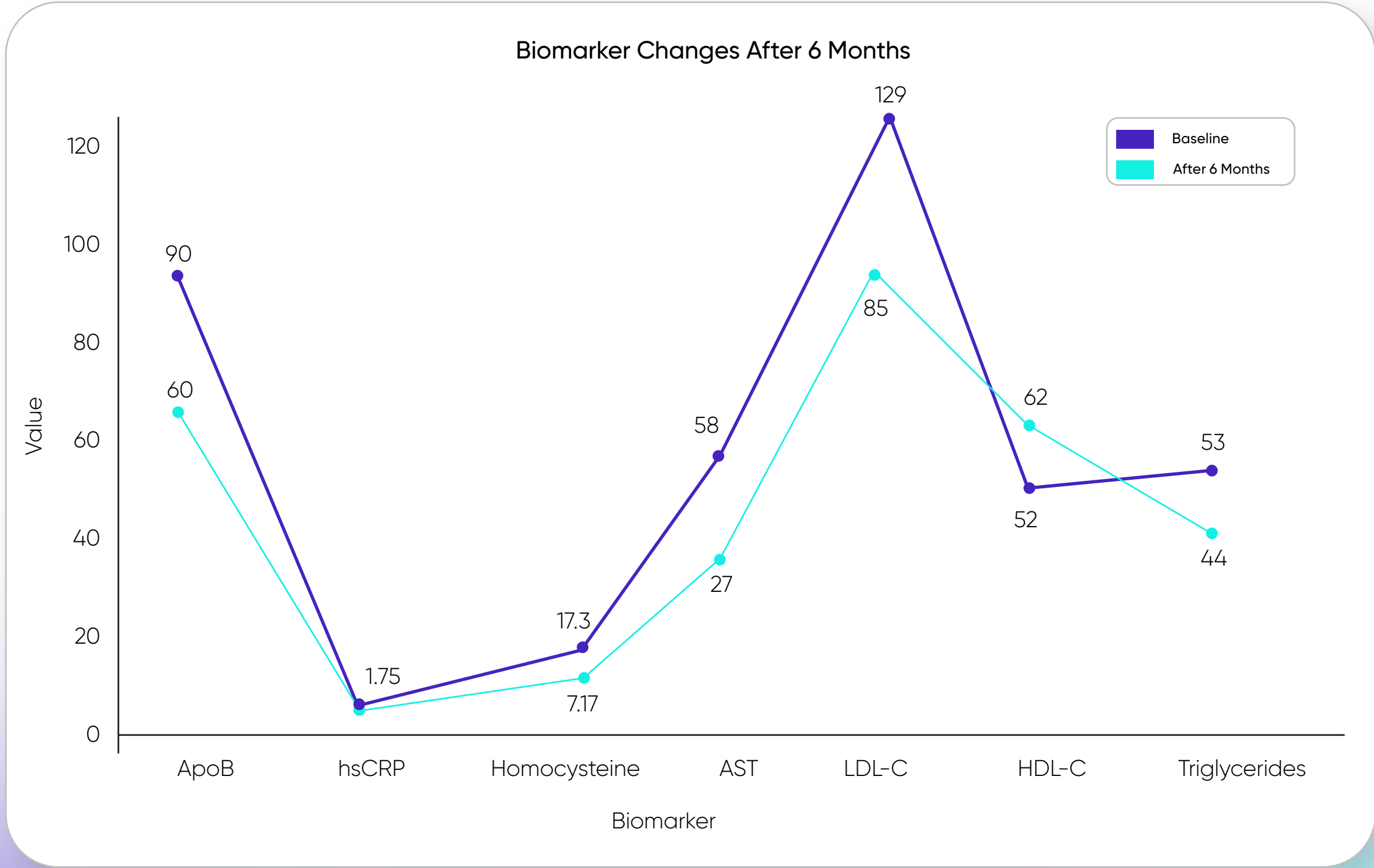


# Biomarker Changes After Six Months



Before vs After

| Biomarker     | Baseline | After 6 Months | Change |
|---------------|----------|----------------|--------|
| ApoB          | 90       | 62             | ↓31%   |
| hsCRP         | 1.75     | 0.32           | ↓82%   |
| Homocysteine  | 17.3     | 7.17           | ↓59%   |
| AST           | 58       | 27             | ↓53%   |
| LDL-C         | 129      | 85             | ↓34%   |
| HDL-C         | 52       | 62             | ↑19%   |
| Triglycerides | 53       | 44             | ↓17%   |





# Key Improvements Explained

08

## Cardiovascular Risk - ApoB

Reducing ApoB lowers the number of cholesterol particles capable of forming plaque in artery walls.

A reduction from 90 to 62 significantly lowers long-term risk of:

- Heart attack
- Stroke
- Artery hardening

## Inflammation - hsCRP

hsCRP reflects chronic inflammation in the body.

Persistent inflammation is associated with increased risk of:

- Cardiovascular disease
- Diabetes
- Neurodegenerative conditions
- Autoimmune disorders

An 82% reduction indicates a major improvement in inflammatory health.

## Methylation - Homocysteine

Homocysteine reflects how well the body performs methylation, a biochemical process important for:

- DNA repair
- Detoxification
- Neurotransmitter balance
- Cardiovascular protection

Normalization suggests improved vascular and neurological health.

## Liver Health - AST

AST rises when liver cells are under stress.

Normalization suggests improved liver metabolism and reduced oxidative stress.

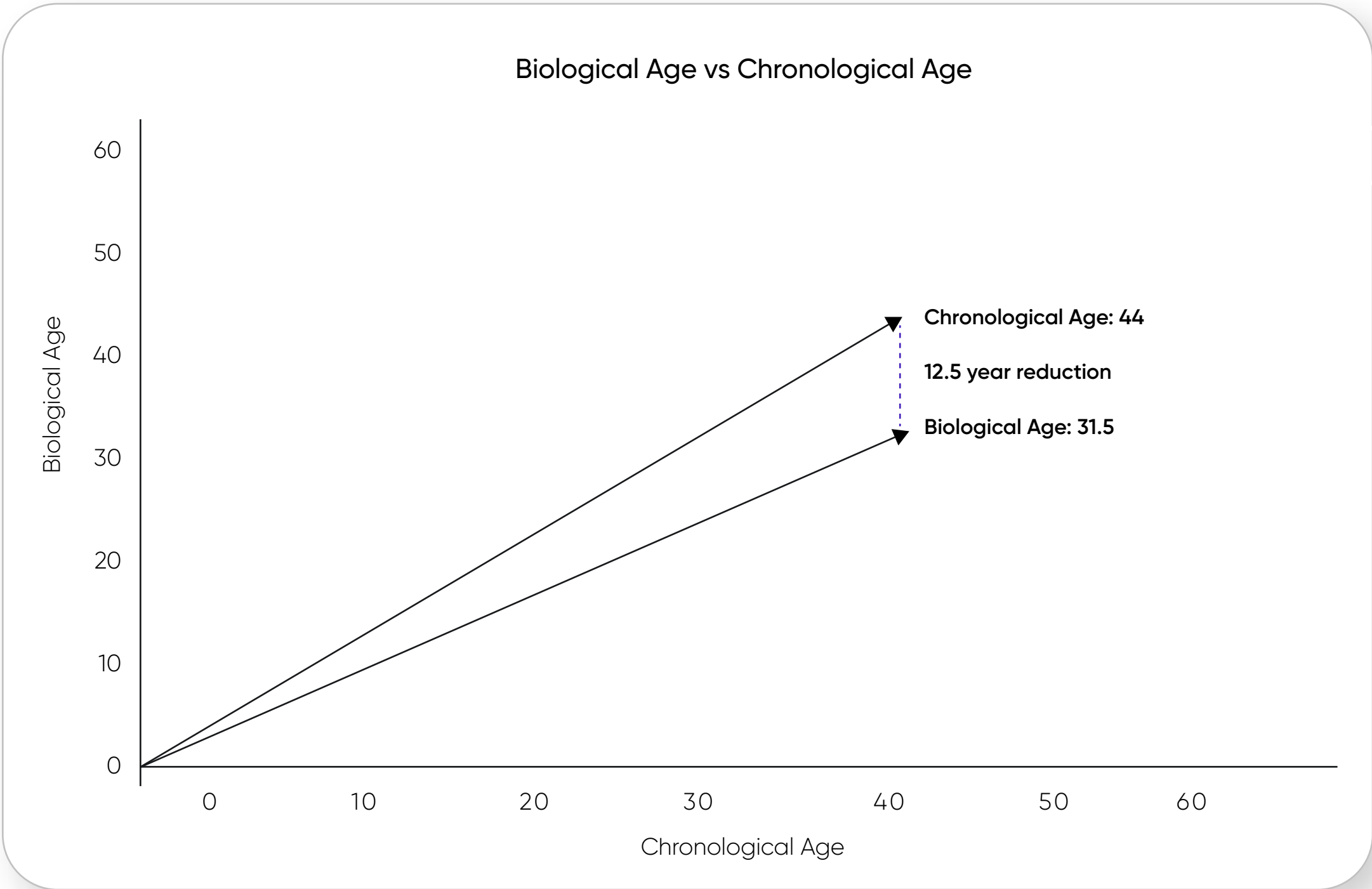
# Biological Age Change

## PhenoAge Result

| Measurement              | Value      |
|--------------------------|------------|
| Baseline Biological Age  | 44 years   |
| Follow-up Biological Age | 31.5 years |

**Total biological age reduction: 12.5 years**

This reflects a significant improvement in overall physiological health.



# Client Feedback

10

At the end of the six-month program, the client reported noticeable improvements compared with baseline.

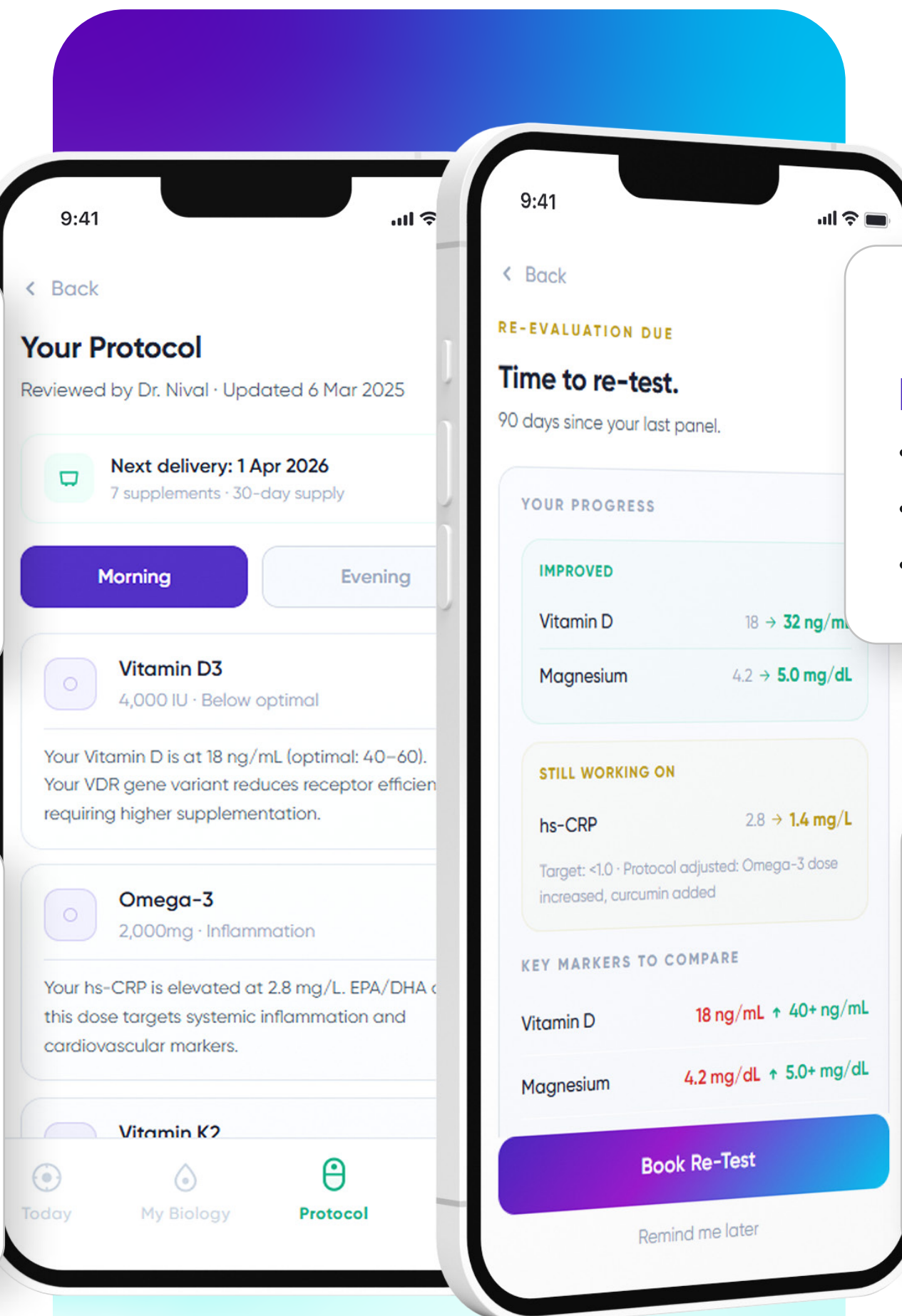
## Mental clarity

- Clearer thinking
- Improved concentration
- Faster decision making



## Energy and mood

- More stable energy throughout the day
- Fewer energy crashes
- Improved stress resilience



## Physical performance

- Stronger gym performance
- Improved endurance
- Faster recovery after exercise



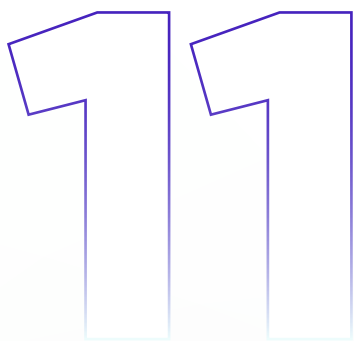
## Professional performance

The client reported improved productivity and sharper thinking at work, largely due to improved mental clarity and consistent daily energy.





# Interpretation



Taken together, the biomarker improvements indicate meaningful changes across several biological systems.

| System                | Evidence                   | Meaning                                          |
|-----------------------|----------------------------|--------------------------------------------------|
| Cardiovascular health | Lower ApoB and LDL         | Reduced lifetime risk of heart attack and stroke |
| Inflammation          | hsCRP reduction            | Lower chronic disease risk                       |
| Methylation           | Homocysteine normalization | Improved vascular and neurological health        |
| Liver health          | AST normalization          | Better metabolic resilience                      |
| Biological aging      | PhenoAge reduction         | Slower aging trajectory                          |

# Conclusion

12

This six-month case study demonstrates how precision health strategies can significantly improve biological health markers even in individuals who appear outwardly healthy.

Using Elite Vita's Precision Health Algorithm, targeted interventions based on biomarkers and genetics led to:

- Improved cardiovascular markers
- Reduced systemic inflammation
- Restored methylation balance
- Improved liver health
- A 12.5-year reduction in biological age

These results highlight the potential of precision medicine to slow the biological processes that drive aging and chronic disease.

