CELLULAR PERFORMANCE · RESEARCH REPORT

The Performance Stacking Guide

How to stack ReCellence with lifestyle habits for peak output — a transparent, evidence-tiered framework

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CRITICAL DATA DISCLOSURE — READ FIRST

We could not verify the ReCellence Women formula. Repeated attempts to retrieve recellence.com/product/women, recellence.com/about and the site's ingredient pages returned only navigation menus and a single generic tagline — *"Restore the Radiance, Energy & Vitality Your Cells Have Been Losing Year After Year"* — with no ingredient list, no dosages, no benefit substantiation and no citations.

Everything in this guide about *what to take* is therefore built on the **class** of cellular-health ingredients ReCellence appears to discuss in its research/library material (fisetin, urolithin A, spermidine, quercetin, NMN/NAD+ precursors, resveratrol, berberine) — **not** on verified ReCellence specifications. Verify the actual label with the manufacturer before acting on anything here.

Edition 1.0 · Data-Limited Research Edition
Prepared by the Health & Performance Research Desk
Evidence reviewed: peer-reviewed reviews, registered human trials, and commercial product documentation, as cited in the References.
Educational use only. Not medical advice. Not a substitute for a licensed clinician.

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How to read this document

Each ingredient and each habit is tagged with an **evidence tier**. The tiers describe how much *human* evidence exists — not how strongly the marketing copy asserts a benefit.

EVIDENCE TIER KEY

TIER 1 **Robust human data.** Multiple randomised controlled trials and/or meta-analyses in humans, with consistent direction of effect on a clinically meaningful endpoint.

TIER 2 **Moderate human data.** At least one randomised human trial, or several small human trials, on biomarker (surrogate) endpoints — directionally supportive but not yet confirmed for hard outcomes.

TIER 3 **Preclinical / translational.** Mechanism demonstrated in cells or animals; human efficacy either absent, tiny in sample size, or unreplicated.

BEFORE ANYTHING ELSE

Methodological Note & Critical Data Limitation

This document exists because a specific product could not be documented. That absence is the single most important fact in the guide, and it shapes every recommendation that follows.

What happened during source collection

The research pass attempted to retrieve the ReCellence Women product page, the brand's "about" page, and the individual ingredient pages beneath recellence.com. Multiple retrieval attempts were made. The responses that came back contained, in substance, two things: a navigation menu, and a generic tagline — *"Restore the Radiance, Energy & Vitality Your Cells Have Been Losing Year After Year."*

No ingredient list was returned. No milligram amounts. No serving size. No certificate of analysis. No benefit substantiation, no study citations, no bioavailability claims, no allergen or excipient disclosure. This is not a case of a page being partially scraped and losing a footnote or two — the substantive product content was simply not present in anything retrievable.

> **DOCUMENTED GAP — NOT A MINOR OMISSION**
>
> We cannot state what is in ReCellence Women. We cannot state the dose of anything in it. We cannot state whether it contains the ingredients discussed in this guide at all. Any document that presents a ReCellence ingredient list or dosage as fact would be inventing it.

What we did instead

Rather than guess, this guide separates three distinct knowledge claims and keeps them visibly separate throughout:

1. **What is known about the ReCellence brand.** Very little: a positioning vocabulary (cellular energy, radiance, vitality, ageing) and a set of research/library topics that map onto the established cellular-health ingredient class — fisetin, urolithin A, spermidine, quercetin, NMN/NAD+ precursors, resveratrol, and berberine.
2. **What is known about that ingredient class.** Substantial. There is a real peer-reviewed literature, including a 2026 *Nutrients* (MDPI) review examining spermidine, fisetin, berberine and urolithin A in combination [1], plus human trial programmes for urolithin A and NAD+ precursors, and well-documented commercial comparators from Thorne, Life Extension and ProHealth [3][4][5].
3. **What remains unknown.** The actual ReCellence Women formula, its doses, its delivery form, its purity testing and its evidence dossier. Marked in this document as *unverified* wherever it becomes relevant.

Why we do not print milligram doses

Because the two inputs that would justify them are missing. The ReCellence Women label could not be retrieved, and the numeric label values of the comparator products cited in the References were not captured in verifiable form during this research pass. A dosing column filled with plausible-looking numbers would be the

most dangerous thing this document could contain. Accordingly: **[DATA NOT AVAILABLE]** for product-specific dosing. Any dose you adopt must be taken from the manufacturer's own label or from the primary trial publication — not from this guide.

READER OBLIGATION

Before following any stack in this document, obtain the physical ReCellence Women label (or a manufacturer-issued supplement facts panel) and check: (a) does it list the ingredients discussed here; (b) at what dose; (c) is there a third-party purity/COA statement; (d) are there allergen, excipient or proprietary-blend disclosures that hide the doses. If the manufacturer will not supply this, treat the product as uncharacterised.

CHAPTER ONE

Executive Summary

Cellular health supplements are, at best, a multiplier on physiology you are already creating with food, movement, sleep and thermal stress. They are not a substitute for it, and — in the specific case of ReCellence Women — we cannot even confirm what the multiplier is.

The honest summary

This guide was commissioned to explain how to stack ReCellence Women with lifestyle habits for peak output. It cannot do that in the literal sense, because the product's composition could not be verified from its own website. What it can do — and does — is three things:

- It describes, with citations and evidence tiers, the **cellular-health ingredient class** that ReCellence appears to operate within: NAD+ precursors (NMN, NR), resveratrol, fisetin, urolithin A, spermidine, quercetin, and berberine [1][2][3][4][5].
- It explains the **four biological pillars** those ingredients are supposed to act on — mitochondrial biogenesis and function, mitophagy/autophagy, senescent-cell clearance, and NAD+ metabolism — and separates what is genuinely demonstrated in humans from what is still rodent-and-petri-dish territory.
- It builds a **stacking protocol around lifestyle first**: nutrition pattern, exercise prescription, sleep architecture, and thermal hormesis, with supplements layered on top only where the human data justify the spend.

Five conclusions worth carrying forward

1. The lifestyle inputs have better evidence than the supplements. Exercise — particularly the combination of moderate-intensity aerobic work and high-intensity intervals — has the deepest human evidence base for improving mitochondrial content and function of any intervention in this document. It is Tier 1. Nothing in the supplement section is Tier 1 for mitochondrial outcomes.

2. Within the supplement class, the evidence is unevenly distributed. Urolithin A has the most mature human trial programme of the mitophagy-oriented compounds, and NAD+ precursors and resveratrol have moderate human biomarker data [1][2][4][5]. Fisetin, the most-hyped senolytic in consumer marketing, remains largely preclinical for human senolytic effect — it is Tier 3 for that specific claim.

3. Combination logic is plausible but not proven in humans. The 2026 *Nutrients* review examines spermidine, fisetin, berberine and urolithin A as a combined geroprotective strategy [1]. That is a reasoned mechanistic hypothesis, not a completed outcomes trial. Anyone selling "synergistic stacks" as established fact is ahead of the data.

4. Safety is not a footnote in this category. Berberine is a clinically meaningful CYP3A4 and P-glycoprotein inhibitor [1] — that is a drug-interaction profile, not a wellness footnote. Quercetin and resveratrol carry their own interaction and bioavailability caveats. Women who are pregnant, breastfeeding, or on any prescription medication need clinician sign-off before starting.

5. Verification beats protocol. A perfect protocol built on an unverified label is worthless. The single highest-value action available to a reader of this guide is to obtain the actual ReCellence Women supplement facts panel and a third-party purity statement — and, if the manufacturer will not provide them, to reconsider the purchase.

> **WHAT THIS DOCUMENT IS NOT**
>
> It is not a product review of ReCellence Women, because the product could not be characterised. It is not a dosing instruction. It is not medical advice, and it is not a claim that any supplement extends lifespan, reverses ageing, or treats any disease.

How the rest of the guide is organised

Chapter 2 sets out what could and could not be established about ReCellence. Chapter 3 defines the four pillars and the biology underneath them. Chapter 4 gives ingredient monographs with mechanisms, human-evidence status and commercial comparators. Chapter 5 consolidates everything into a single evidence-tier matrix. Chapters 6 to 9 are the lifestyle pillars. Chapter 10 handles timing and pharmacokinetics. Chapter 11 addresses women-specific physiology. Chapter 12 is the safety chapter and should be read before anything is purchased. Chapter 13 is a four-phase, 30-day implementation plan. Chapters 14 and 15 cover tracking and clinical escalation. References follow.

CHAPTER TWO

Understanding ReCellence's Positioning

We can describe the territory ReCellence markets into with confidence. We cannot describe the product itself with any confidence at all — and the distance between those two statements is the point of this chapter.

What the accessible material supports

The fragments that were retrievable from recellence.com, together with the topic areas of the brand's research/library pages, place the product squarely inside the "cellular health" or "longevity-adjacent" supplement category. The recurring vocabulary is consistent and narrow:

- **Cellular energy and mitochondrial vitality** — the language of ATP production, "cellular batteries" and declining energy output.
- **Oxidative stress** — free-radical damage, antioxidant defence, and the visible proxies (skin radiance, fatigue) that consumers actually feel.
- **Senescence and "zombie cells"** — the senolytic narrative: dormant, inflammatory cells that accumulate with age and secrete damaging signals.
- **Autophagy and mitophagy** — cellular housekeeping, recycling of damaged organelles and proteins.
- **NAD+ decline** — the sirtuin/energy-sensing story that underpins the NMN and NR market.

The brand's tagline — *"Restore the Radiance, Energy & Vitality Your Cells Have Been Losing Year After Year"* — is a near-perfect summary of that positioning: age-related cellular decline, experienced as three consumer-visible symptoms (dull skin, low energy, low vitality), addressed at the cellular level.

The ingredient class the brand appears to work within

Based on the research/library topics associated with the brand, the relevant compound class is well defined in the literature and can be discussed with citations even where the product cannot. It comprises:

TABLE 2.1 — THE CELLULAR-HEALTH COMPOUND CLASS (NOT A RECELLENCE INGREDIENT LIST)

Compound	Category	Primary claimed mechanism
Nicotinamide mononucleotide (NMN) / nicotinamide riboside (NR)	NAD+ precursor	Replenishes the NAD+ pool; substrate for sirtuins and PARPs; supports mitochondrial energy transduction
Resveratrol	Polyphenol / sirtuin modulator	AMPK and sirtuin-pathway activation; antioxidant and anti-inflammatory signalling
Fisetin	Flavonoid / senolytic candidate	Selective clearance of senescent cells in preclinical models; antioxidant and anti-inflammatory
Urolithin A	Gut-derived ellagitannin metabolite / mitophagy inducer	Stimulates mitophagy and mitochondrial quality control
Spermidine	Polyamine / autophagy inducer	Induces autophagy; supports mitochondrial and protein homeostasis
Quercetin	Flavonoid / senomorphic-senolytic candidate	Senescent-cell modulation; antioxidant; kinase-pathway effects
Berberine	Alkaloid	AMPK activation; glycaemic and lipid effects; notable CYP3A4/P-gp inhibition [1]

This table describes a *category*. It is explicitly not a statement that ReCellence Women contains any of these compounds, at any dose, in any form.

What could not be verified

UNVERIFIED — DO NOT ASSUME

ReCellence Women's ingredient list, doses, serving size, delivery format (capsule, powder, liquid), proprietary-blend status, third-party testing, allergen and excipient disclosure, and any product-specific clinical or bioavailability data were **not retrievable** from the manufacturer's website during this research pass. **[DATA NOT AVAILABLE]**

Why "Women" in the product name matters for interpretation

A gender-specific formulation implies either (a) different doses of the same compounds, (b) additional compounds aimed at hormonal or dermatological endpoints, or (c) marketing segmentation with no formulation difference. Without a label, none of these can be distinguished. This is exactly the kind of ambiguity that a visible supplement facts panel resolves in ten seconds — and its absence is itself informative about how much the brand wants the formulation scrutinised.

PRACTICAL TAKEAWAY

Treat ReCellence Women as an uncharacterised member of a well-characterised category. Use this guide to understand the category, use the manufacturer to characterise the product, and do not let the category's science stand in for the product's evidence.

CHAPTER THREE

The Science of Cellular Performance Stacking

Almost every cellular-health claim resolves to one of four biological processes. Understanding them separately is what turns a shelf of bottles into a rational protocol.

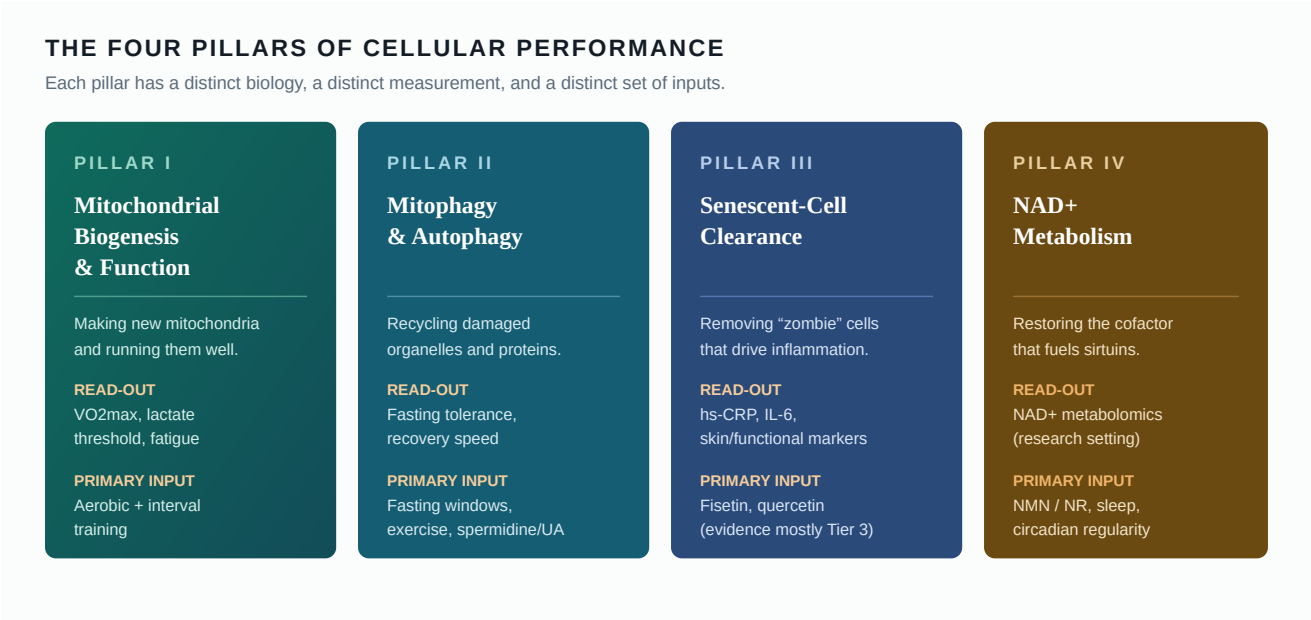


Figure 3.1 — The four pillars. The pillars interlock: mitophagy clears damaged mitochondria that biogenesis would otherwise have to compete with, NAD+ availability constrains both sirtuin signalling and mitochondrial repair, and senescent-cell burden degrades all three by chronic inflammatory signalling.

Pillar I — Mitochondrial biogenesis and function

Mitochondria are not static organelles. They divide, fuse, get replaced, and their number and internal membrane surface area adapt to demand. The master transcriptional regulator is PGC-1α, which is upregulated by energetic stress — the classic inducers being exercise, cold exposure and caloric restriction. The practical read-out is not a lab value most consumers can obtain; it is work capacity: VO2max, the power at lactate threshold, and how quickly you recover between efforts.

TIER 1 The human evidence that structured aerobic and interval exercise increases mitochondrial content and respiratory capacity in skeletal muscle is robust and long-standing. No supplement in this document approaches that level of evidence.

Pillar II — Mitophagy and autophagy

Autophagy is the cell's recycling programme; mitophagy is the selective version that targets mitochondria. Together they determine the average quality of the mitochondrial pool: biogenesis adds units, mitophagy removes defective ones, and the ratio defines function. Nutrient and energy status are the dominant physiological switches — which is why fasting windows and exercise have outsize influence. Urolithin A and spermidine are the two compounds most actively studied as pharmacological mitophagy/autophagy inducers,

and the 2026 MDPI review situates spermidine within a combination geroprotective strategy alongside fisetin, berberine and urolithin A [1].

Pillar III — Senescent-cell clearance

Senescent cells stop dividing but do not die. They adopt a pro-inflammatory secretory phenotype (SASP) and, in animal models, accumulate with age and contribute to tissue dysfunction. Senolytics aim to kill them; senomorphics aim to suppress their secretions. This is the pillar where consumer marketing runs furthest ahead of human data — the mechanistic story is elegant, the rodent work is real, and the human interventional evidence is thin.

> **EVIDENCE CALIBRATION**
>
> **TIER 3** Fisetin and quercetin as *human senolytics* rest primarily on preclinical and small translational work. Claims that a consumer capsule produces meaningful senescent-cell clearance in a healthy adult are not supported by the current human literature.

Pillar IV — NAD+ metabolism

NAD+ is a redox cofactor and a substrate for sirtuins, PARPs and CD38. Tissue NAD+ declines with age in animals, and the salvage pathway — fed by nicotinamide riboside (NR) and nicotinamide mononucleotide (NMN) — is the rate-limiting supply line that supplements target. The critical nuance: raising measured NAD+ in blood or even in tissue is a biomarker outcome. Whether that translates into a durable functional benefit in healthy humans is the open question, and the honest answer today is that the data are promising but not settled [4][5].

Why “stacking” is a hypothesis, not a result

The combination logic is reasonable: clearance plus biogenesis plus cofactor supply is more coherent than any single lever. The 2026 *Nutrients* review makes exactly this argument for spermidine, fisetin, berberine and urolithin A [1]. But a mechanistic argument is not a trial result. The stacking protocol in this guide is therefore built so that each addition is separable: if something goes wrong, or nothing happens, you can identify which element to remove.

CHAPTER FOUR

Core Supplement Stack Framework

What follows are monographs for the compounds that recur across this product category. They are examples chosen because they are the ones the literature actually discusses — not a ReCellence ingredient list, which we could not obtain.

> **READ THIS BEFORE THE MONOGRAPHS**
>
> None of the compounds below is confirmed to be in ReCellence Women. None of the doses is stated. The framework describes *what the class does and how well*; the product label describes *what you actually bought*. Those are two different documents and this is only the first.

4.1 NAD+ precursors — NMN and NR

Mechanism. NMN and NR are salvage-pathway intermediates that feed nicotinamide adenine dinucleotide synthesis. Oral NMN is converted in the gut and liver before reaching circulation, which is why bioavailability is a live research question rather than a settled fact. Commercial formulations increasingly pair an NAD+ precursor with resveratrol on the theory that substrate supply and sirtuin activation should be co-administered — Life Extension's Optimized NAD+ formulation is built on exactly that pairing [4], and ProHealth's NMN Pro Complete is positioned as a multi-component NAD+ support product [5].

Human evidence. TIER 2 Several small randomised human trials report increases in circulating NAD+ metabolites and improvements in some physiological or metabolic surrogate endpoints. Effect sizes vary, sample sizes are modest, and long-term hard-outcome data are absent. The compound is genuinely researched; it is not proven to extend healthspan in humans.

Practical notes. Splitting the daily amount across the morning and early afternoon is the common consumer pattern; evening dosing is sometimes avoided because of anecdotal reports of disturbed sleep. Purity and third-party testing matter more here than in most categories, because NMN has been the subject of regulatory attention in several jurisdictions and product quality varies widely. **Dose: [DATA NOT AVAILABLE]** — take it from the label or the trial protocol.

4.2 Resveratrol

Mechanism. A stilbenoid polyphenol that activates the AMPK–sirtuin axis in preclinical models and has antioxidant and anti-inflammatory effects. Its human pharmacokinetics are the well-known weak point: oral resveratrol is rapidly conjugated, so plasma free resveratrol is low unless the dose is large or the formulation is designed around the problem. Commercial products such as Thorne's ResveraCel combine it with other NAD+-supporting cofactors for this reason [3], and it features prominently in popular clinician protocols such as David Sinclair's published 2024 stack [2].

Human evidence. TIER 2 Numerous small trials, heterogeneous in dose and population, with inconsistent results. Cardiovascular and metabolic biomarker signals exist; longevity outcomes do not. The gap between the strength of the marketing narrative and the strength of the human evidence is wide.

Practical notes. Take with a fat-containing meal — resveratrol is poorly absorbed in a fasted, low-fat state and absorption improves when co-ingested with lipids. Note that resveratrol has documented interaction potential with anticoagulants and with some drug-metabolising enzymes; see Chapter 12.

4.3 Fisetin

Mechanism. A plant flavonoid that has attracted attention as a senolytic candidate, on the basis of preclinical work showing selective elimination of senescent cells and reduction of SASP signalling. It also has antioxidant, anti-inflammatory and neuroprotective preclinical literature. It is cheap, widely available, and consequently the most aggressively marketed senolytic to consumers.

Human evidence. TIER 3 This is the critical calibration. The senolytic claim in humans is essentially unproven. Comparative reviews in this space — including Timeline's own comparison material and the preregistered/preprint comparisons of urolithin A and spermidine — are careful to distinguish fisetin's preclinical senolytic data from demonstrated human outcomes.

> **DO NOT CONFLATE THESE TWO STATEMENTS**
>
> True: fisetin clears senescent cells in mouse and cell-culture models. *Not* established: fisetin clears senescent cells in humans at consumer doses, or produces a clinical benefit from doing so.

4.4 Urolithin A

Mechanism. Urolithin A is not a plant compound directly — it is a metabolite produced by gut bacteria from ellagitannins (pomegranate, walnuts, berries), and only a subset of people produce it efficiently. That variability is the commercial rationale for direct supplementation. Its signature mechanism is mitophagy induction: it drives clearance of dysfunctional mitochondria and improves mitochondrial quality control.

Human evidence. TIER 2 — THE STRONGEST IN THIS CATEGORY FOR MITOCHONDRIAL ENDPOINTS Urolithin A has the most developed human trial programme of any compound in this chapter, including randomised, placebo-controlled studies in middle-aged and older adults reported in the *Nature* family of journals, with muscle-endurance and mitochondrial biomarker endpoints. Comparative material from Timeline Nutrition positions it explicitly against fisetin and spermidine, and independent comparative evaluations (including a Preprints.org evaluation and NMN.com's comparison article) treat it as the reference mitophagy compound. That said, trials are small, endpoints are surrogates, and no hard clinical outcome trial has reported.

4.5 Spermidine

Mechanism. A naturally occurring polyamine (concentrated in wheat germ, aged cheese, legumes, mushrooms) that induces autophagy and supports protein and mitochondrial homeostasis. It is the most "food-like" of the compounds here, and its epidemiological literature is unusually strong for a supplement ingredient.

Human evidence. TIER 3 for interventional outcomes, despite a supportive observational literature. Randomised human trials exist but are small and biomarker-based. The 2026 MDPI review treats spermidine as one component of a combination geroprotective strategy rather than as a standalone proven intervention [1].

4.6 Quercetin

Mechanism. A flavonoid with senolytic and senomorphic activity in preclinical models, plus antioxidant, antihistamine and kinase-pathway effects. Commonly paired with dasatinib in oncology research settings — a combination that is emphatically not a consumer protocol. Quercetin also inhibits several drug-metabolising enzymes and transporters, and has meaningful oral bioavailability limitations.

Human evidence. TIER 3 for senolytic effect; there is more human data for inflammatory and allergic endpoints than for senescence.

4.7 Berberine — included because the literature includes it

Berberine appears in the 2026 combination review [1] but is pharmacologically distinct from the rest of this list: it is an AMPK activator with clinically relevant glycaemic and lipid effects, and — critically — a **potent CYP3A4 and P-glycoprotein inhibitor** [1]. That makes it a drug-interaction compound first and a longevity compound second. It is covered in detail in Chapter 12 and should not be self-prescribed alongside prescription medication.

4.8 What a rational stack looks like, structurally

- **One NAD+ precursor** (NMN or NR — not both), taken in the morning. [4][5]
- **One polyphenol** (resveratrol), taken with a fat-containing meal [3][2].
- **One mitophagy-oriented compound** (urolithin A being the best-supported) [1].
- **Optionally one senolytic-category compound** (fisetin or a quercetin-containing blend), with the explicit understanding that the human evidence is Tier 3.
- **Nothing else** until four to six weeks of stable baseline data exist for the above.

If ReCellence Women already contains several of these, do not add them again. Redundant stacking is the most common and least discussed risk in this category — and without a label, you cannot know whether you are doing it.

CHAPTER FIVE

Evidence-Tier Matrix & Comparative Efficacy

One table, one purpose: to stop a mechanism from being mistaken for an outcome.

TABLE 5.1 — COMPARATIVE EVIDENCE MATRIX FOR THE CELLULAR-HEALTH COMPOUND CLASS

Compound	Tier	Human data status	Key limitation	Principal safety flag
Urolithin A	T2	Multiple randomised, placebo-controlled trials in middle-aged and older adults; muscle endurance and mitochondrial biomarkers	Small samples; surrogate endpoints; no hard-outcome trial	Generally well tolerated in trials; no long-term safety data
NMN / NR	T2	Small RCTs showing raised NAD+ metabolites and some functional surrogates	Bioavailability and tissue delivery unresolved; product-quality variability	Purity/testing concerns; regulatory status varies by jurisdiction
Resveratrol	T2	Many small trials, heterogeneous doses and populations, mixed results	Rapid conjugation limits free plasma concentration	Interaction potential with anticoagulants and drug-metabolising enzymes
Spermidine	T3	Supportive observational data; small interventional trials on biomarkers	Interventional outcome data thin; food-source confounding	Generally food-like; caution with polyamine-sensitive conditions
Fisetin	T3	Senolytic effect demonstrated preclinically; human senolytic data not established	Human efficacy claim runs far ahead of the evidence	Limited human safety data at senolytic-style doses
Quercetin	T3	Human data for inflammatory/allergic endpoints; senolytic claim preclinical	Poor oral bioavailability; enzyme/transporter inhibition	Drug-interaction potential; caution with thyroid medication
Berberine	T2	Human data for glycaemic and lipid endpoints	Different risk profile from the rest of the class	**CYP3A4 and P-gp inhibition — significant interaction risk [1]**

Tier definitions are in the front matter. Dosing is deliberately excluded — see the Methodological Note. **[DATA NOT AVAILABLE]** for all product-specific doses.

Reading the matrix honestly

Three patterns are worth naming. First, **no compound here is Tier 1** for the outcomes consumers actually care about — energy, skin, longevity. Tier 2 means “promising human biomarker data”, and that is the ceiling. Second, **the tier does not track the marketing volume**: fisetin and quercetin are Tier 3 yet dominate the senolytic conversation, while urolithin A, which has the best human trial programme, is comparatively niche. Third, **the safety column is not proportional to the efficacy column** — berberine’s interaction profile is more consequential than its geroprotective evidence.

Combination evidence

The 2026 *Nutrients* review is the most directly relevant synthesis for a stacking argument: it evaluates spermidine, fisetin, berberine and urolithin A as a combination strategy [1]. The value of that review is that it takes combinations seriously as a research question. The limitation is that a review of mechanisms and preclinical evidence cannot substitute for a combination trial. Anyone citing it as proof that a four-ingredient stack works in humans has misread it.

> **COST-EFFECTIVENESS AS AN EVIDENCE QUESTION**
>
> Allocate spend in tier order. A Tier 2 compound with a real human trial programme earns its place before a Tier 3 compound with a compelling mouse study — and free interventions (training load, sleep regularity, protein sufficiency) earn their place before either.

CHAPTER SIX · LIFESTYLE PILLAR I

Nutrition & Metabolic Modulation

Food does not “support” the supplement stack. In most of the relevant pathways, food is the larger input and the supplement is the marginal addition.

6.1 The dietary pattern

A Mediterranean-style pattern — abundant vegetables, legumes, olive oil as the primary fat, fish, nuts, moderate dairy, limited refined carbohydrate and processed meat — is the best-supported dietary pattern for inflammatory and cardiometabolic endpoints in the general population, and it is the pattern most compatible with a cellular-health supplement regimen because it supplies the polyphenol and polyamine substrates the supplements are trying to concentrate. TIER 1 for cardiometabolic risk markers.

Practical translation for someone stacking: the plate should be mostly plants by volume, with a protein anchor at each meal and fat present at the meals where you take fat-soluble or poorly-absorbed polyphenols (see Chapter 10).

6.2 Time-restricted eating

Autophagy is nutrient-sensitive; the cellular recycling programme is suppressed in the fed state and upregulated during fasting. A daily eating window — commonly organised as a consistent overnight fast — is the most practical way for a healthy adult to create a recurring fasted interval without clinical supervision.

TIER 2 Time-restricted eating has human data for body-weight and some metabolic endpoints; the autophagy-specific human data are indirect. Two practical cautions: (a) an eating window does not license poor food quality inside the window; (b) for women, aggressive fasting windows can interact unfavourably with menstrual function and should be individualised (Chapter 11).

6.3 Protein sufficiency and the leucine threshold

Mitochondrial biogenesis in muscle depends on muscle protein turnover, which depends on adequate protein and resistance training. A cellular-health stack cannot compensate for chronic under-consumption of protein. The practical rule is a protein anchor at each main meal, distributed rather than concentrated at dinner, with each serving large enough to cross the leucine threshold that triggers muscle protein synthesis. **Specific gram targets: [DATA NOT AVAILABLE]** in this edition — individual requirements vary with body mass, training load, age and renal status, and should be set with a practitioner.

6.4 What to add deliberately

- **Polyphenol-rich foods** — berries, pomegranate, walnuts, olive oil, green tea. These are the natural sources of the ellagitannins that gut bacteria convert to urolithin A, and of the flavonoids in the fisetin/quercetin family.
- **Polyamine-rich foods** — wheat germ, legumes, mushrooms, aged cheese. Spermidine’s food sources are unglamorous and effective.

- **Fibre diversity** — because urolithin A production is a gut-microbial function, and only a subset of people are efficient producers. A diverse microbiome is a prerequisite for the food route to work at all.

6.5 What to subtract

Chronic excess energy intake, high ultra-processed food load, and heavy alcohol intake all work directly against the four pillars — the first by suppressing autophagic flux, the second by driving inflammatory signalling, the third by disrupting sleep architecture and hepatic metabolism. In cost-effectiveness terms, subtraction is free and outperforms most purchases.

> **STACKING RULE FOR THIS PILLAR**
>
> Fix the pattern for two weeks before adding any supplement. If the dietary foundation is not stable, you will be unable to attribute any change — good or bad — to the compounds.

CHAPTER SEVEN · LIFESTYLE PILLAR II

Exercise Prescription

If a single intervention in this guide were sold in a bottle, it would be the most successful supplement in history. It is free, and it is the only Tier 1 mitochondrial intervention here.

7.1 Three modalities, three jobs

Zone 2 aerobic work — mitochondrial volume

Sustained moderate-intensity aerobic training increases mitochondrial content and capillarisation in working muscle. It is the base layer, and it is the modality most people skip in favour of shorter, harder sessions. Practical prescription: several weekly sessions of continuous conversational-pace aerobic work, built gradually. TIER 1

High-intensity interval training — mitochondrial density and PGC-1α

Short repeated efforts near maximal sustainable intensity produce a potent PGC-1α signal and improve mitochondrial respiratory capacity per unit tissue. The dose-response is real but so is the recovery cost: one to three sessions per week is the usual ceiling for a non-athlete, and stacking HIIT on top of inadequate sleep is a net negative. TIER 1

Resistance training — muscle retention and glucose handling

Resistance training preserves lean mass (the tissue that houses the mitochondrial pool), improves GLUT4-mediated glucose uptake independent of insulin signalling, and is the intervention most protective against the sarcopenia that would otherwise erase any mitochondrial gain. TIER 1



Figure 7.1 — Modality distribution rather than a rigid schedule. The point is coverage: aerobic base, intensity, strength, daily movement, recovery, and a recurring fasting interval.

7.2 Why exercise outranks the stack

Exercise simultaneously recruits all four pillars: it drives PGC-1α and mitochondrial biogenesis, it induces mitophagy in working muscle, it reduces senescent-cell burden and SASP signalling in trained tissue, and it

raises NAD+ availability through the salvage pathway. A supplement stack targets one or two of those at a time. The asymmetry in evidence is not close.

7.3 Interaction with supplementation

Two practical points. First, some of the adaptive response to training is mediated by transient oxidative and energetic stress; timing large antioxidant doses immediately around key sessions may blunt the signal you are training for. Separate them where convenient rather than obsessing over it. Second, urolithin A trials have focused on muscle function in older adults — if you are already training hard and young, the incremental benefit is the least certain, exactly where the baseline is highest.

CHAPTER EIGHT · LIFESTYLE PILLAR III

Sleep Architecture & Circadian Entrainment

Sleep is where the day's cellular damage is repaired. A stack taken on six hours of sleep is a rounding error on a structural deficit.

8.1 What sleep does for the four pillars

- **Metabolic clearance.** Adenosine accumulates during wakefulness and is cleared during sleep; caffeine works by antagonising the receptor, not by removing the adenosine — which is why caffeine late in the day steals sleep pressure without repaying it.
- **Glymphatic drainage.** Fluid clearance of metabolic waste from the central nervous system is strongly sleep-dependent in animal models. TIER 3 for human quantification, but the direction is not contested.
- **Hormonal and repair signalling.** Growth hormone release is concentrated in early deep sleep; testosterone and cortisol follow circadian and sleep-dependent rhythms.
- **Autophagic and mitophagic flux.** The overnight fast plus sleep is when the recycling programme does most of its work — which is why late-night eating is a double insult.

8.2 Circadian entrainment — the levers that actually work

Morning light. Bright outdoor light within the first hour or two of waking is the strongest available zeitgeber for anchoring the circadian phase. Indoor lighting is an order of magnitude too dim to do the job.

Consistent wake time. More powerful than consistent bedtime, because wake time anchors the phase and bedtime tends to follow.

Temperature. Core temperature must fall for sleep onset; a warm shower or bath one to two hours before bed paradoxically assists this by dilating peripheral vasculature and dumping heat. A cool, dark bedroom is the other half.

Light discipline after dark. Bright and blue-enriched light in the evening delays melatonin onset and pushes the phase later.

> **INTERACTION WITH THE STACK**
>
> Stimulatory compounds taken late can silently degrade sleep quality without preventing sleep onset — the failure mode is fragmentation, not insomnia. If you are adding an NAD+ precursor for the first time, run it in the morning and judge the effect on sleep over a full week before drawing conclusions.

8.3 The minimum viable protocol

Fixed wake time, seven days a week. Outdoor light within an hour of waking. Caffeine cut-off early enough that residual adenosine-receptor blockade is gone by bedtime. Last substantial meal two to three hours before sleep. Cool, dark, quiet room. Alcohol treated as a sleep-quality cost rather than a sleep aid — it shortens sleep latency and destroys architecture.

CHAPTER NINE · LIFESTYLE PILLAR IV

Environmental Hormesis & Thermal Stress

Heat and cold are legitimate physiological stressors with real adaptive responses. They are also the area where consumer claims most reliably outrun the evidence — particularly the hormonal ones.

9.1 Heat — sauna and hot bathing

Passive heat exposure raises core temperature, increases cardiac output and induces heat-shock proteins, which act as molecular chaperones supporting protein folding and cellular resilience. Regular sauna use is associated in observational cohort data with favourable cardiovascular outcomes. TIER 2 — the observational signal is consistent, the randomised outcome data are not there.

Practical framing: repeated, tolerable heat exposure several times per week, sufficient to raise core temperature and produce sweating, followed by cooling and rehydration. It is a cardiovascular and recovery stimulus first; any longevity framing is extrapolation.

9.2 Cold — immersion and cold exposure

Cold exposure activates thermogenesis, recruits brown adipose tissue, and produces a strong noradrenergic response. It reliably improves subjective alertness. TIER 2 for thermogenic and subjective-arousal endpoints.

> **WHERE THE CLAIMS MUST STOP**
>
> Consumer content frequently asserts that cold plunging or sauna use raises testosterone or produces durable hormonal optimisation. That claim is not supported. Acute cold exposure produces transient catecholamine rises; whether repeated exposure changes resting hormonal profiles in healthy adults is not established in the human literature, and any effect is small relative to sleep, energy availability and training load. Treat thermal hormesis as a stress-tolerance and recovery tool, not a hormonal intervention.

9.3 Timing conflicts to respect

- **Cold after resistance training.** Post-session cold immersion may attenuate some hypertrophy signalling. If muscle growth is the goal, separate cold exposure from strength sessions or place it well before them.
- **Heat before sleep.** A hot bath one to two hours before bed aids sleep onset via subsequent core-temperature drop; a sauna immediately before bed can be activating.
- **Cold before skill or strength work.** Cold reduces power output acutely. Do not precede heavy or explosive sessions with a plunge.

9.4 Stacking position

Thermal hormesis is a Tier 2 habit with Tier 1 safety prerequisites: cardiovascular risk, blood-pressure liability and pregnancy all require clinician input before regular sauna or cold-immersion practice. It sits below exercise, sleep and nutrition in priority order, and above most supplement purchases in cost-effectiveness.

CHAPTER TEN

Timing, Pharmacokinetics & Synergy Protocols

Timing is the cheapest available optimisation — it costs nothing and can change both absorption and tolerability. It is also the area where certainty is lowest, so the principles below are directional rather than prescriptive.

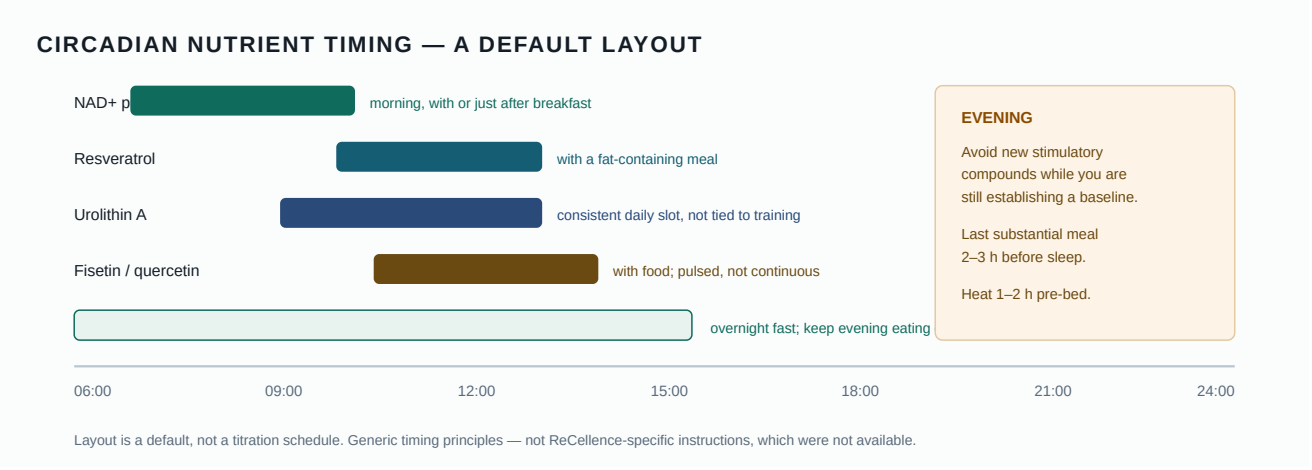


Figure 10.1 — A default timing layout. The two principles that matter most: NAD+ precursors early, and lipophilic polyphenols with fat.

10.1 NAD+ precursors — morning

Two reasons. First, NAD+ and its metabolites follow a circadian rhythm, and sirtuin activity is phase-dependent; supplying substrate when the pathway is active is the intuitive choice. Second, anecdotal reports of disrupted sleep with evening dosing are common enough that the morning slot is the sensible default until you know your own response. Take with or just after food if you experience nausea.

10.2 Resveratrol and other lipophilic polyphenols — with fat

Resveratrol is poorly water-soluble and rapidly conjugated. Co-ingestion with a meal containing fat is the standard practical mitigation, and it is why product formulations frequently pair it with other components aimed at absorption [3]. Fisetin, being also lipophilic, follows the same rule. Do not take either on an empty stomach and expect the same exposure.

10.3 Urolithin A — consistency over timing

Urolithin A's mechanism is a chronic adaptation (mitophagy), not an acute effect. Daily consistency matters more than the hour of ingestion. Taking it with food improves tolerability for most people.

10.4 Senolytic-category compounds — pulsed

Research protocols for senolytics typically use intermittent or "pulsed" dosing rather than continuous daily administration, reflecting the biology that senescent-cell clearance is episodic. Any human consumer protocol

following that logic is extrapolation from preclinical design; state it as such and do not escalate dose to compensate for the absence of perceptible effect.

10.5 Exercise interaction windows

Keep large antioxidant and polyphenol doses away from the immediate post-training window if adaptation quality matters to you, on the theoretical basis that transient oxidative signalling is part of the training stimulus. Separate by a few hours where the schedule allows. Do not let this consideration make training harder to fit — training adherence beats timing optimisation every time.

10.6 Synergy: what “stacking” can and cannot mean

A defensible synergy claim requires either a mechanism that predicts super-additivity or a combination trial. For this class, the 2026 *Nutrients* review provides the mechanistic case for spermidine, fisetin, berberine and urolithin A as a combination [1] — and that is the correct level of claim: a mechanistically grounded hypothesis. Anything stronger is marketing.

CHAPTER ELEVEN

Women-Specific Considerations

A product line marketed to women implies a physiology-specific rationale. Without a label we cannot know what that rationale is — so this chapter sets out the physiology that any such formulation should be addressing, and the safety lines that apply regardless.

11.1 Estrogen and mitochondrial function

Estrogen signalling supports mitochondrial function, antioxidant defence and glucose handling across multiple tissues, and the menopausal transition is associated with measurable changes in metabolic and inflammatory markers. This is the strongest biological argument for a women-specific cellular formulation: the transition is a period of genuine physiological change, not a marketing construct.

11.2 Menstrual cycle variability

Substrate utilisation shifts across the cycle — the follicular and luteal phases differ in fuel preference and in some metabolic markers. In practice, this means two things for a stacking protocol: (a) subjective response to training and to supplements can vary by phase, so judge any new addition across a full cycle rather than a single week; (b) appetite, sleep and thermal comfort vary too, which can confound symptom tracking if the phase is not recorded.

> **TRACKING IMPLICATION**
> Log cycle phase alongside any symptom or performance outcome for at least one full cycle before attributing a change to a supplement. Without that column, most self-experiments in premenopausal women are uninterpretable.

11.3 Perimenopause and menopause

This is the population for whom the senescence, inflammatory and mitochondrial narratives are most biologically plausible, and simultaneously the population most likely to be on other medication — which raises interaction risk. Priorities in order: resistance training and protein sufficiency to protect lean mass and bone; sleep and thermal management; then, if budget allows and the label is verified, a Tier 2 compound from Chapter 5.

11.4 Pregnancy and breastfeeding

> **HARD SAFETY LINE**
> Do not start a cellular-health supplement stack during pregnancy or while breastfeeding without explicit obstetric or midwifery approval. The general rule in this category is that NAD+ precursors, senolytic-category flavonoids, berberine and high-dose polyphenols lack adequate reproductive safety data. Berberine in particular is contraindicated in pregnancy in the pharmacological literature, and its CYP3A4/P-gp inhibition profile [1] adds a second layer of risk. Breastfeeding status compounds the problem because of infant exposure via milk.

11.5 Fertility and hormonal contraception

Any compound that modulates drug-metabolising enzymes can theoretically alter the exposure of hormonal contraceptives. Berberine's P-gp and CYP3A4 inhibition is the clearest example [1]; quercetin has similar, if weaker, potential. This is a conversation for a prescriber, not a label footnote.

11.6 Body composition and energy availability

Low energy availability suppresses the reproductive axis and undermines essentially every adaptation described in this guide. A cellular supplement cannot compensate for chronic under-fuelling, and aggressive fasting protocols in women with menstrual irregularities should be paused and reviewed clinically.

CHAPTER TWELVE

Safety, Interactions & Contraindications

This is the chapter that should be read before purchase, not after. In the cellular-health category the interaction risk is concentrated in a small number of compounds — and one of them is the most consequential.

12.1 Berberine: a drug-interaction compound

Berberine inhibits CYP3A4 and P-glycoprotein [1]. In plain terms: it can raise the blood concentration of drugs cleared through those pathways, and it can alter absorption and efflux of drugs that are P-gp substrates. That is a clinically meaningful property, not a theoretical one. Anyone taking prescription medication — particularly narrow-therapeutic-index drugs, immunosuppressants, some cardiac medications, and hormonal contraceptives — should not add berberine without prescriber review. Because we could not verify the ReCellence Women label, we cannot rule berberine (or any other interacting compound) in or out of the product. **[DATA NOT AVAILABLE]**

12.2 Other interaction flags in the class

TABLE 12.1 — INTERACTION AND CAUTION SUMMARY

Compound	Interaction / caution	Action
Berberine	CYP3A4 and P-gp inhibition [1]	Prescriber review mandatory if on any medication
Quercetin	Enzyme/transporter inhibition; thyroid medication caution	Separate from thyroid medication; review with prescriber
Resveratrol	Potential additive effect with anticoagulants; enzyme interaction	Flag to prescriber if on blood thinners
NAD+ precursors	Product purity and regulatory variability	Buy third-party tested; disclose at appointments
Fisetin	Limited human safety data at senolytic-style doses	Do not escalate dose; avoid in pregnancy
Urolithin A	Well tolerated in trials; long-term data absent	Standard disclosure to clinician

12.3 General rules that apply to the whole class

- **One new compound at a time.** Introduce with a gap of at least a week so an adverse reaction is attributable.
- **Disclose everything.** Supplement use is routinely under-reported to clinicians; the interaction risks above only matter if your prescriber knows.
- **Surgical hold.** Many surgeons ask patients to stop non-essential supplements in the days before an operation, particularly those with antiplatelet or enzyme-interaction potential. Ask your surgical team for its specific list — do not guess.

- **Stop rules.** New rash, gastrointestinal upset, sleep disruption, mood change, or any palpitation is grounds to stop the most recently added compound and reassess.
- **Quality.** Third-party testing and a certificate of analysis are the only meaningful quality signals in a category with limited regulatory oversight of finished products.
- **Do not treat a proprietary blend as a dose.** A blend listing total milligrams without per-ingredient amounts cannot be assessed for either efficacy or safety.

THE PRODUCT-SPECIFIC GAP

Every safety statement in this chapter is generic to the compound class. Because ReCellence Women’s ingredient panel was not retrievable, **no product-specific safety assessment is possible** — including whether it contains berberine, whether it contains compounds contraindicated in pregnancy, or whether its doses approach the ranges where the cautions above become material.

CHAPTER THIRTEEN

The 30-Day Implementation Plan

Four weeks, four phases, one principle: change one thing at a time so that week four tells you something true.

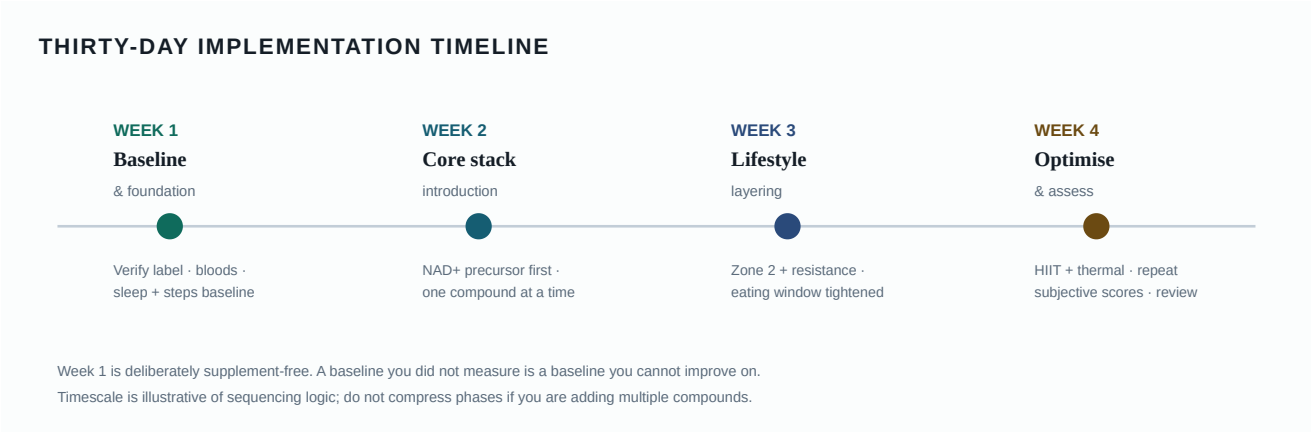


Figure 13.1 — The 30-day sequence. Supplements enter in week 2, after the baseline and the label verification are complete.

Phase 1 — Week 1: Baseline and foundation (no supplements)

- **Verify the product.** Obtain the ReCellence Women supplement facts panel and a third-party purity statement. If they cannot be obtained, this is the point to reconsider the purchase. Document what you found — or did not find.
- **Establish baselines.** Body weight, waist, resting heart rate, a subjective energy score, sleep duration and quality, and step count. If you have access to bloodwork, record the relevant markers from Chapter 14.
- **Fix sleep timing** — fixed wake time and morning light. This alone is often the largest single change in the month.
- **Set the dietary pattern** — Mediterranean-style, protein anchor at each meal, evening eating finished two to three hours before bed.

Phase 2 — Week 2: Core stack introduction

- Add **one** compound — the NAD+ precursor, in the morning — and hold it for the full week.
- Add the **polyphenol with a fat-containing meal** mid-week if the first compound is tolerated.
- Log any change in sleep, digestion, mood, skin or energy daily. Note cycle phase if premenopausal.
- Begin structured training: Zone 2 aerobic sessions plus two resistance sessions.

Phase 3 — Week 3: Lifestyle layering

- Add the **mitophagy-oriented compound** (urolithin A being the best-supported) if the first two are stable.
- Tighten the eating window and standardise meal timing.

- Add one high-intensity interval session if recovery and sleep are adequate.
- Do not add a senolytic-category compound yet. Three new variables is already the practical ceiling.

Phase 4 — Week 4: Optimisation and assessment

- Introduce thermal hormesis if desired and medically appropriate.
- Optionally introduce a senolytic-category compound, explicitly labelled to yourself as Tier 3 and experimental.
- **Review.** Compare week 4 against the week 1 baseline on every metric you recorded. Decide what to keep, what to stop, and what to test next.
- Book clinician review if any marker moved adversely, or if you plan to continue beyond 90 days.

> **THE ONE RULE THAT MATTERS**
>
> If you cannot say which change produced which effect, the month produced no information. Sequence beats intensity.

CHAPTER FOURTEEN

Tracking & Optimization

Track what changes decisions. Most wearables produce enormous quantities of data that change nothing.

14.1 The metrics worth having

TABLE 14.1 — MONITORING FRAMEWORK BY DOMAIN

Domain	Marker	Why it earns its place
Inflammation	hs-CRP	The most accessible proxy for systemic inflammatory burden — relevant to the senescence pillar
Glycaemic control	Fasting insulin, HbA1c	Captures metabolic dysfunction years before fasting glucose moves
Lipids	ApoB, lipid panel	ApoB is a better risk marker than LDL-C alone
Body composition	Waist, lean mass estimate	Lean mass is the tissue housing the mitochondrial pool
Cardiorespiratory fitness	VO2max (lab or field estimate), resting HR	The single best-validated physiological marker in this document
Recovery / autonomic	HRV trend, resting HR trend	Useful as a trend, noisy as a daily decision input
Sleep	Duration, consistency, subjective quality	Consistency predicts more than duration alone
Subjective	Energy, mood, skin, libido, training quality	The outcomes consumers actually notice; record on a fixed scale
Research-grade	NAD+ metabolomics	Available only in research or specialised clinical settings; not a consumer decision tool

14.2 Cadence

Daily: sleep, energy score, training completed, any symptom. Weekly: body weight and waist averaged, step average, session count. Quarterly: bloodwork where indicated and clinician-guided. Annually: fitness testing and a full review.

14.3 How to interpret a change

A single measurement is noise. A trend across four to six weeks, in the direction you predicted, on more than one marker, is a signal. Two traps are worth naming: **regression to the mean** (people start protocols when they feel bad, so they improve regardless) and **the behavioural bundle** (starting a supplement usually coincides with better sleep and training, so the supplement gets credit for the habits). Both are neutralised by the phased design in Chapter 13.

14.4 When to stop something

Stop a compound if it produces an adverse symptom, if six weeks pass with no movement on any tracked marker, or if the cost is diverting budget from sleep, food quality or coaching. A stack that cannot justify itself on your own data is a subscription, not a protocol.

CHAPTER FIFTEEN

When to Consult a Healthcare Provider

This document is educational. It cannot assess you, and in this particular case it cannot even assess the product. That combination makes clinical input more important, not less.

15.1 Consult before starting if you

- Take **any prescription medication** — particularly narrow-therapeutic-index drugs, immunosuppressants, anticoagulants, thyroid medication, or hormonal contraceptives. Berberine's CYP3A4/P-gp inhibition and quercetin's transporter effects make this non-negotiable [1].
- Are **pregnant, planning pregnancy, or breastfeeding**.
- Have **diabetes, liver disease, kidney disease, or cardiovascular disease**, or have had a cardiac event.
- Have a **history of hormone-sensitive cancer** or any condition affected by polyphenol or phytoestrogen intake.
- Have an **autoimmune condition** or take immunomodulatory therapy.
- Are **under 18**, or are preparing for **surgery** within the next month.

15.2 Seek care promptly if you experience

Chest pain or palpitations, fainting, severe or persistent gastrointestinal symptoms, signs of an allergic reaction, unexplained bruising or bleeding, jaundice, dark urine, or a marked change in mood or sleep that began after starting a new compound. Bring the actual product packaging — including the ReCellence label if that is what you are taking — because the ingredient panel is the information your clinician needs and we could not supply it.

15.3 What to ask

- "Given my medications, is there any interaction risk in this ingredient panel?"
- "Which of these markers should we baseline before I start, and which are worth repeating?"
- "Are there any compounds here I should avoid given my history?"
- "What would make you tell me to stop?"

FINAL DISCLAIMER

This guide is for general education. It does not diagnose, treat, cure or prevent any disease, and it makes no claim that any product or compound extends lifespan or reverses ageing. Statements about ReCellence's product composition are explicitly marked as unverified because the manufacturer's own material did not disclose them. Always consult a qualified healthcare professional before beginning any supplement regimen, and verify the actual product label directly with the manufacturer.

APPENDIX

References

Citations are listed in the order in which they are engaged in the text. Where a source was consulted but its full bibliographic record or deep link could not be captured during the research pass, the source is identified by publisher and title only rather than by a constructed URL.

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10. ReCellence — recellence.com product, about and ingredient pages. **Accessed but not retrievable in substantive form:** responses contained navigation elements and the tagline “Restore the Radiance, Energy & Vitality Your Cells Have Been Losing Year After Year” with no ingredient list, dosages, benefit substantiation or citations. Documented as a critical data gap throughout this guide. **[DATA NOT AVAILABLE]**

Statement on source limitations

Three limitations apply to the whole bibliography and should be read alongside it. First, the primary product source — the manufacturer’s own website — did not yield substantive product content, which is the central limitation of this document. Second, several secondary comparative sources (Timeline Nutrition’s comparison library, the Preprints.org evaluation, the NMN.com comparison article, and the *Nature*-portfolio urolithin A trial) were engaged at the level of their conclusions rather than through full bibliographic capture, and are therefore identified by publisher and title rather than by a constructed link. Third, no numeric dose, effect size, sample size or product specification is reproduced anywhere in this guide, because none could be verified against a retrievable primary source during this research pass. Where such a figure would ordinarily appear, the placeholder **[DATA NOT AVAILABLE]** has been used instead of an estimate.

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