

The GLP-1 Face

Non-surgical ways to restore facial volume
after rapid weight loss



by Kobie Wilkinson

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This book is consumer education. It is not medical advice, and the author is not a clinician. Nothing in it should override your prescriber. Never change or stop a prescribed medication based on anything you read here.

First edition

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Non-Surgical Ways to Restore Facial Volume After Rapid Weight Loss

Kobie Wilkinson

Important: please read this first.

This book is consumer education. It is not medical advice, and I am not a clinician.

A physician has not reviewed it either. I want you to know that right away, not figure it out later. Everything clinical in these pages comes from published research, and the references are at the back so you can check any of it. Still, sourcing is not the same as a clinical review. I can confirm that a study says what I claim, but I can't spot a clinical judgment error because I'm not qualified to do that.

So read this as what it is: a carefully researched patient's account, written by someone who went looking for answers and wrote down what he found. Useful, I hope. Not a medical text, and no substitute for the person who actually knows your history.

What that means practically:

Nothing in this book should override your prescriber. Not one sentence. If your doctor tells you to be evaluated, be evaluated.

Never change or stop a prescribed medication based on something you read here. Chapter 3 explains why that specific mistake sends people to emergency rooms.

Every injectable and energy-based treatment described here is a medical procedure performed by a qualified provider. This book will not teach you to do anything to yourself.

If you have kidney disease, heart failure, are pregnant, or take medications that interact with anything discussed here, the general guidance in these pages may not apply to you. Your clinician's advice wins.

Get help immediately, not from a book, if you experience any of the following: severe or worsening abdominal pain, persistent vomiting, no bowel movement and no passage of gas for more than 72 hours, blood in your stool, or after any injection, pain, changes in skin color, blanching, or changes in your vision.

A note on the phrase you searched for

You probably found this book looking for “Ozempic face.”

I'm not going to use that phrase much, for two reasons.

The first is accuracy. What happens to your face isn't caused by one brand of one drug. It happens with semaglutide, tirzepatide, and their relatives, and it happens after bariatric surgery and after large non-medication weight loss too. The nickname stuck to one product because it became popular. Chapter 3 covers the mechanism properly.

The second reason is that the phrase makes it sound like a side effect that just happened to you, instead of a result of losing fat quickly. That difference matters, because you can do something about consequences, but not about side effects. So I'll mostly say what I mean: facial volume loss after rapid weight loss.

How the evidence ratings work

Every significant claim in this book carries one of three labels. They're the reason it exists.

Strong: multiple good studies, consistent findings, and I'd be comfortable if you acted on it. Sunscreen. Retinoids. Protein. Resistance training.

Mixed: real evidence exists, but it's limited, inconsistent, funded by interested parties, or measured in ways that don't quite answer the question. Most things fall into this category. That isn't a dismissal; it's a reminder to keep your expectations realistic.

Mostly Marketing: the claims are far ahead of the evidence, and often the loudest claims have the weakest support.

One pattern you'll see several times in this book: the strongest evidence for a product often comes from the people who sell it. Collagen companies fund collagen supplement trials. Face yoga research is co-authored by the founder of the face yoga program. "Device manufacturers publish clinical evidence guides" for home devices, and the main trial for a biostimulator in GLP-1 patients was run by the company

that makes it.

None of that means those findings are false. It means you can't use them to check whether they're true, which is what looking something up is for.

If you take one habit from this book, take that question: who paid for this?

What this book doesn't know

Three honest limitations, stated up front instead of hidden later.

Most of the skincare evidence isn't about you. The research behind retinoids, sunscreen, and vitamin C was conducted on sun-damaged and aging skin, not on people who lost sixty pounds in a year. The biology is the same, and the extrapolation is reasonable. It's still an extrapolation, and those trials haven't been run.

Most of the device and treatment evidence isn't about men. One major review of radiofrequency microneedling included 531 women and 27 men. If you're a man reading this, much of the data pertains to someone else, and I'll say so where it matters.

The quality of sources varies by chapter, and I've marked that. Chapter 9 is the best-sourced in the book, with every figure checked against a primary source. Chapter 8 has several numbers I could only find in secondary or industry-published material, and I've labeled those. If I couldn't verify something, I removed it instead of softening it. Chapter 7 includes

a paragraph about a claim I took out for that reason.

How to use this book

Three of you are reading this, and you need different chapters first.

If you're still losing weight, you're actually in the best position of anyone reading this, even if it doesn't feel that way. Go to Chapters 3 through 5 first. That's the prevention material. It's free, it's the most valuable content in the book, and every week you skip it costs you something you might later pay to fix.

If your weight has just stabilized — start at Chapter 6. Your skin is still adapting, and you have real decisions ahead about whether to intervene and when.

If you're a year or two out and unhappy, go to Chapters 8 through 10. That's where you'll find the treatments, what they cost, what they can actually do, and how to choose the right provider.

Everyone should read Chapter 2. It's short, and it's the map. Nothing else in the book makes sense without it. Everyone should also read Chapter 10 before booking anything. It has the questions you need to ask, and one of them is more important than all the others.

A note on the people in this book

The story in these pages is mine, and it's true.

When I describe other people, like a passenger, a doctor, or my partner, I've changed or left out identifying details. The nurse whose conversation started all of this doesn't know she's in a book. She'd probably find it funny.

When I write about patterns I've seen in online communities of people on these medications, I make it clear that it's just what I observed, not formal data. There's a difference, and this book is mostly about respecting that.

What I'm not selling you

I run a website about GLP-1 medications and gut health. Some links there earn me a commission if you buy something—including links to a telehealth provider and supplement companies, one of whose products I take myself every night. I disclose all of that on the site.

I'm telling you here because Chapter 7 will ask you to check who paid for the information you're reading, and it would be worthless advice if I didn't answer the question about myself.

Here's what I've done to keep those relationships out of this book:

No product names appear anywhere in it, not in the skincare chapter, not in the devices chapter, and not in the section where I describe the supplement I take for constipation. Where a specific recommendation would genuinely help, I've sent you to the site instead — partly because products and prices go stale and a printed page can't be corrected, and partly because a product I'm paid for doesn't belong in the middle of a

chapter you're trusting for medical information. No company paid for anything in this book, commissioned it, reviewed it before publication, or was told what it would say. And where the evidence went against my own interests, I printed it anyway. The collagen verdict in Chapter 4 costs me money. So does the recommendation in Chapter 7 to buy \$100 of skincare instead of a \$400 device. If you want a test of whether the ratings in this book mean anything, those are the two places to look.

Where to start

Turn to Chapter 1 if you want the story.

Turn to Chapter 2 if you want the answer.

Either is fine.

CHAPTER 1

The Face in the Mirror

My face was coming in.

I didn't see it first. I felt it. I was shaving, and my hand went over my cheek the way it had every morning for as long as I'd owned a razor, and the shape underneath was different. Less there. More give than there used to be.

And the dimple was bigger. That's the part that remained with me, because a dimple is supposed to be a small thing that shows up when you smile. Mine was something I could feel standing still, with my fingers.

Coming in. That's the phrase I kept using, because I didn't have a better one. Not thinner, exactly. Coming in — like something was being drawn back from underneath.

I was losing weight. I was finally doing the thing I'd failed at for twenty years; it was working, and I was standing at the sink, not liking what I'd found.

Nobody told me this was part of it.

To explain how I got there, I have to go back to a car ride.

She got in my Uber around 12:30, the manner she always did on the nights she worked.

I'd been driving her for a long time by then. Long enough that we usually talked — nothing deep, just the easy back-and-forth you get with a regular. However, that night she was quiet, and I could feel it. Something was on her mind. I didn't ask. About ten minutes before her stop, she started talking about death.

She works the ER. She told me she knows what death looks like. She's seen it come in through those doors enough times to know what puts it there. And then she got specific, and she was talking about me.

There were chocolate wrappers on my back seat. There was peppermint on the floor where trash had spilled out of the center console. She'd seen it when she got in.

She told me that at my age, this stuff would kill me. That it had no nutritional value in it at all. That it was full of chemicals that would kill me.

It frightened me. Not because a stranger spoke something harsh — because it wasn't a stranger, and because in all the time I'd been driving her, she had never once said anything to me that wasn't true.

THE 60-SECOND ANSWER

If you're reading this, something about your face changed, and nobody prepared you for it.

Here's what you need to know before anything else. It's common. It has a mechanism, which means it has levers. Some of it is preventable, and some of it is treatable, and a fair amount of what's being sold to you for it doesn't work. This book is not a warning about the medication. I'm on it. I recommend it. It changed my life, and I'm not writing this to talk anybody out of anything.

What I'm writing is the manual I didn't have.

Why the wrappers were there

I want to explain the trash on my floor, because it isn't the story people assume.

I spent twenty-one and a half years in a factory, running machines that made wire products. That's where the weight came on. Two decades of shift work will do that to a person, and it did it to me.

When I left that job, I started driving. Uber, Lyft, other gig work around the area — about six years of it, two of them full-time, mostly nights. I picked up a lot of nurses coming off second shift and going onto third. Doctors too. A lot of regulars. Here's the thing about working as a driver that nobody

tells you: you cannot eat right doing it. The math doesn't work. You have to put in the hours to make the money, and every minute you spend finding real food is a minute you're not earning. So you eat what's open at midnight. You eat what you can buy in ninety seconds and finish at a red light. You eat gas station food, and then you eat it again the next night.

I wasn't eating chocolate because I lacked discipline. I was eating chocolate because it was there and I had four minutes. I say this because I suspect some of you got here the same way, and you've spent years being told it was a character problem. It wasn't. It was a circumstances problem. That distinction matters, and it's going to matter again later in this book when we talk about what you can and can't control.

What I did next

She gave me her number before she got out. Told me to call her directly.

I'd heard of GLP-1 medications before that night. I hadn't paid them any attention. I figured it was a Hollywood drug — something for rich and famous people, not for somebody picking up fares at midnight in his Uber.

So I started poking around. I started with the Facebook groups, just to read. Not to post, to watch what people were actually saying about it. Then I went and read the manufacturer's site for Mounjaro. And what I found was all upside. Everything I read told me I could lose a lot of weight, and lose it fast, and that was enough to get me into my

doctor's office. I want to flag something about that, because it's the first mistake in this book and it's mine.

I only researched the good part. I researched whether it would work. I never once researched what it would do to me along the way—what would happen to my digestion, my energy, my muscles, my face. I asked, “Will this take the weight off?” got a yes, and stopped.

You're already ahead of where I was, because you're holding a book about the part I skipped.

The part where you wait

My doctor said I was a candidate. Then she said it would be a back-and-forth with my insurance company, because they don't just hand this over. It had to go through prior authorization.

I was already a type 2 diabetic, which is what made me an easy yes on the medical side. The delay was paperwork, not eligibility.

That's worth understanding if you're at this stage, because it's where a lot of people get stuck. If you do not have diabetes and you don't have another specific documented reason, insurance frequently won't cover it — and these are expensive medications at retail. The access problem is real, and it isn't your fault.

A word about the cheaper route, since it's the first thing people ask. Between 2022 and 2025, compounded versions were widely available at a fraction of brand-name pricing because the FDA had these drugs on its shortage list, which

temporarily allowed pharmacies to make copies. That window has closed — the shortages were declared resolved in late 2024 and early 2025, and in April 2026 the FDA proposed shutting the door permanently.

Compounded product still exists in narrower circumstances, and I'm not going to tell you not to use it. For many people whose insurance says no, the alternative is nothing. But go in knowing four things: it isn't FDA-approved and hasn't been through the same testing; formulations vary; "personalized" blends with B12 or amino acids are mostly a marketing workaround; and anything sold with no prescriber involved isn't a compounding pharmacy. Ask which pharmacy fills it. Ask whether they're LegitScript certified. Ask what's actually in the vial.

The full version of this — the dates, the FDA findings, the adverse event numbers — is in Appendix A, because it's the fastest-changing material in this book and you should check it against the current situation rather than trust a page printed months ago.

I got mine at the end of April, through my doctor, with insurance. It took a while. It was worth waiting for. The first few weeks

Nothing happens at first.

The first four days, I felt no different. I kept checking, the way you do. Then somewhere around day five, it arrived — I wasn't hungry. Not "less hungry." Not hungry. And full, fast, off almost nothing.

Then the scale started moving in the direction I wanted, and that part is genuinely exciting. I'm not going to pretend it isn't. Food got strange. Dairy started to taste off to me. Certain sweets did too — the exact things I'd been living on in the car turned unappealing on their own, without me deciding anything. I've heard enough people describe some version of this that I don't think I'm unusual.

And underneath all of that was something I still find hard to explain. I realized I didn't need food the way I'd always thought I did. Not emotionally — physically. I didn't need a mountain of food in front of me anymore. For the first time in my adult life, I was pushing plates away, not because I was being good, but because the food had stopped mattering.

Here's the part I didn't recognize as a problem at the time: I had to force myself to eat.

I want you to sit with how strange that sentence is coming from someone who spent twenty years gaining weight. I had to remind myself to eat. And when you're down forty pounds and happy about it, "I'm not eating much" doesn't feel like a warning sign. It feels like winning.

It was the beginning of the problem this book is about. I'll come back to it in Chapter 4.

Then the trouble started.

Around week five, I realized I was constipated.

I'll be blunt, because being vague about this helps nobody: there were stretches where I went two weeks without a bowel movement.

My first follow-up appointment was around week six. I told my doctor the truth. And her response was instant and serious — she wanted to talk about the emergency room, and she raised the possibility of taking me off the drug entirely. At the time, that appeared like she was protecting herself. I've had more time to think about it since, and I have to be careful here, because this is the one place in this book where I could get somebody hurt.

She was not overreacting. Two weeks without a bowel movement can be an obstruction. On these medications, severe constipation is one of the specific things that lands people in a hospital bed. When a doctor hears that and immediately starts talking about emergency care, the system is working the way it's supposed to. If your doctor tells you to be evaluated, be evaluated. Do not use this book, or anything you read in a Facebook group, as a reason to talk yourself out of that.

What is fair to say is this. The trip to the ER and the decision to end your program are two separate decisions, and they get made as one.

The first one is usually right. Go. Get evaluated.

The second one is where people lose years. Because stopping isn't a pause button. Once you're off, getting back on is hard — the medication is expensive, coverage frequently has to be re-established, your prescriber has to document all over again, and you generally have to restart at a low dose and climb back up, which means going through the early side effects a second time. You can't just stop and go, stop and go. Every stop

costs you months.

And the reason it happens is that “stop the drug” is often the only lever a prescriber has time to reach for. They’re managing the things that hospitalize you — dehydration, obstruction, pancreatitis, gallbladder trouble — in a fifteen-minute visit. Managing side effects so you can stay on the medication is a different job, and it usually does not fit in the appointment. That gap is real, and it’s where too many people quit. They start, they hit their first real side effect, they get told to stop, and they stop — without ever knowing there was anything else to try.

So the useful skill isn’t ignoring your doctor. It’s walking in prepared, so that stopping isn’t the only option on the table. Chapter 3 is about how to have that conversation.

For what it’s worth: I got it managed. It took supplements I still take today, and it took understanding what was actually happening — that these medications slow everything down, so food sits in your stomach far longer than you’re used to. Once I understood the mechanism, the fix made sense. I stayed on the drug. That’s covered properly in Chapter 4. Back to the mirror

Which brings me back to where this chapter started.

I didn’t panic when I first noticed. If anything, I hardly noticed it as a problem. I was still thrilled about the scale, and I had no framework for treating a change in my face as anything but the price of good news.

What I didn't understand then was that I had to manage any of this. I thought the medication did the work and my job was to take it on schedule; that the scale going down was the whole story.

It isn't. There's a set of things nobody hands you a list for — and by the time you notice them in the mirror, you've usually been not-doing them for months.

That list is the rest of this book.

You are not the only one.

Something I noticed once I started reading those Facebook groups seriously, rather than skimming them for reassurance. The same three complaints come up over and over. Constipation. Fatigue. And the face.

That's not a study, and I won't dress it up as one — it's what I've observed over a lot of time in those communities, and it lines up with my own experience and with what the clinical literature reports. But if you're reading this convinced you've had some rare bad reaction, you should know you're describing the third most common story in the room.

What this book is

This book is not anti-medication. I want to be as clear about that as I can be, because there's a genre of writing about GLP-1s that's really fear dressed up as information.

I'm on this drug. I recommend it to people. It has done more for my health than anything else I've tried in twenty years. What I'm saying is that losing weight fast and losing it well

are two different projects, and the prescription only handles the first one. The second one is yours. Your protein, your fluids, your electrolytes, your movement, your rate of loss. Do those, and the journey down is smoother, and what you see at the end looks like you. Skip them, and you'll still probably lose the weight — you won't recognize what's left.

Three ways to read this book:

Still losing? You're in the best possible position. Go to Chapters 3 through 5 first. That's the prevention material; it's free, and it's worth more than everything in Part IV combined.

Just stabilized? Start at Chapter 6. Your skin is still adjusting, and you have real decisions to make about whether to intervene and when.

A year or two out and unhappy? Go straight to Chapters 8 through 10. That's where the treatments are, with what they cost and what they can actually deliver.

Everyone should read Chapter 2. It's short, and it's the map.

THIS WEEK'S ONE THING

Write down four numbers. The date you started. Your weight then. Your weight now. Your current dose.

Then do one piece of arithmetic: pounds lost, divided by weeks on the medication.

That's your rate of loss, and most people have never once calculated it. It is the single number that best predicts what happens to your face; it's the cheapest thing in this entire book to change, and the next chapter is built on it. Have it in front of you when you get there.

CHAPTER 2

Why Your Face Deflated

At about thirty-five pounds down, I noticed my face was coming in.

I didn't think much of it. My face had been big. It seemed like natural math — you lose weight everywhere; your face is part of everywhere, so of course it changes. I figured that was just how it worked.

That's not how it works. Or it is, but it isn't the whole thing, and the part I was missing turned out to be the part that mattered.

Here's what I understand now that I didn't then. The medication does one job. It helps you lose weight. It does not care what kind of weight. Fat, muscle — it doesn't sort them out for you, and it isn't protecting your face while it works. Everything that happens to you on the way down is yours to manage, and you can't manage what you don't understand. You can't fix what you don't know.

So this chapter is what I wish somebody had handed me at thirty-five pounds. Not to scare you. To give you something to work with.

THE 60-SECOND ANSWER

Your face didn't age. It deflated.

Facial fat isn't one soft layer. It's a set of separate compartments, stacked in two levels — a superficial set just under the skin, alongside a deeper set underneath those. When you lose weight, these compartments empty. They don't empty evenly.

The best measurement we have suggests you lose roughly 7% of your midfacial volume for every 10 kilograms — about 22 pounds — of body weight. The superficial compartments give up more than the deep ones.

Meanwhile, the skin stretched over your fuller face doesn't shrink to match. Rapid weight loss also appears to reduce structured collagen in the skin, which limits how well it can pull back.

That's the whole thing: less fill, same envelope, weaker elastic. Every treatment in this book addresses one of those three, and knowing which one is your problem is what stops you from wasting money.

And the sentence to carry with you into Part II: your face thins because your body does — but how much of what you lose is fat versus muscle, and how well the skin over it holds up, are not fixed.

Four layers, not one

Most people picture the face as skin over muscle above bone. Three things. It's a useful simplification, and it's wrong in a way that matters here, because it can't explain what you're seeing in the mirror.

The face has four structural layers, from the inside out:

- Bone gives you your underlying shape — the projection of your cheekbones, the depth of your eye sockets, the width of your jaw. Bone changes over decades, not months. It is not what changes on you.
- Ligaments anchor soft tissue to that bone. They're fibrous bands, and they act less like ropes than like a hammock — holding the softer tissue up against gravity.
- Fat, arranged in discrete compartments rather than one continuous layer. This is the layer that emptied.
- Skin — the envelope over all of it, and the thing you're actually looking at.

The reason this matters immediately: three of these four layers are essentially unchanged in you. Your bone is the same. Your ligaments are the same, or close to it. What changed is fat volume, and what's revealed by that change is the behavior of the envelope. When people describe this as their face aging, they're describing something that isn't happening. Aging affects all four layers over years. You lost fill in one layer over months.

That distinction is not a comfort exercise. It changes what works.

Facial fat is compartmentalized.

For most of the twentieth century, surgeons treated facial fat as one continuous layer and facial aging as a sagging problem—the tissue slid downward, and you pulled it back up. That intuition produced the tight, swept-back look of older facelift techniques.

Then research by Rohrich and Pessa in the 2000s demonstrated something different. Facial fat is partitioned into distinct compartments, separated by fibrous walls, with the retaining ligaments running along the boundaries. Each compartment behaves as its own unit. They can empty independently. They can shift independently.

The compartments come in two levels. Superficial compartments sit between the skin and the more profound structural layer, and they're the ones providing the immediate roundness and softness that reads as youth. Deep compartments sit beneath, providing structural projection—they hold the whole midface out and up. The deep medial cheek compartment is the one that, when filled, restores the cheek's natural fullness from underneath rather than adding bulk to the surface. The names worth knowing, because you'll hear them in a consultation:

- Superficial and deep medial cheek — fullness and forward projection of the cheek

- Sub-orbicularis oculi fat, which providers shorten to SOOF — sits beneath the eye and supports the transition from lid to cheek.
- Temporal — the fat in your temples, above and beside the outer eye
- Buccal — deeper in the lower cheek, the pad associated with fuller lower faces.

Nasolabial and jowl — the compartments bordering the folds that run from nose to mouth and down along the jaw You don't need to memorize these. You need to know that they're separate, because the alternative belief — that your face lost fat evenly — leads directly to the wrong treatment. Someone whose problem is temple hollowing and someone whose problem is a flattened midface have the same nickname for their condition and completely different solutions. The numbers nobody publishes

Here is where most writing on this topic gets vague. You'll read that facial volume loss is "significant" or "noticeable." That's not useful when you're deciding whether to spend \$900.

In 2025, a team at Vanderbilt did something more useful. They found twenty patients who happened to have CT or MRI scans before and after starting a GLP-1—scans done for unrelated medical reasons, the only way to get honest before-and-after data on something like this—and measured the midfacial fat compartments directly.

The patients had a median age of 54. They'd been on the medication an average of 321 days and lost an average of 11 kilograms, about 24 pounds.

What the imaging showed:

- Median total midfacial volume loss: 9%, with a range across the group from about 3% to 14%
- Superficial compartments lost more — a median of 11%
- Deep compartments lost a median of 7%, but with enormous variation between individuals. Some lost substantially. Some actually gained
- Roughly 7% of midfacial volume lost per 10 kg of body weight lost.
- Sit with that last figure for a moment, because it's the most practically useful number in this chapter. It converts an anxiety into arithmetic. Fifty pounds down is about 23 kilograms, which predicts somewhere near 16% of your midfacial volume — not as a certainty, but as a reasonable expectation.

Two honest caveats. Twenty patients is a small study, and the researchers themselves framed it as an early quantification rather than a settled answer. And individual variation was wide: total volume loss ranged from 3% to 14%, meaning two people with identical weight loss can end up with very different faces. If you've been comparing yourself to someone on the same medication who looks fine, this is why. It isn't discipline. It's compartmentalized behavior you don't control.

The superficial-versus-deep finding also has a practical edge. Superficial loss correlated with how much weight was lost. Deep loss didn't correlate reliably. That's an argument for treatments aimed at the superficial layer being more predictable in this population — a point we'll come back to in Chapter 8, and one worth raising with an injector who assumes you need deep structural filling by default.

Why the temples and under-eyes tell on you first

People notice their cheeks last, which surprises them.

The reason is geometry and light. A compartment's visual impact isn't proportional to its size — it's proportional to how much the overlying surface changes shape when it empties. Your temples have thin skin over a relatively small fat pad with bone immediately behind. A small volume change there produces a visible concavity, and concavities catch shadow. The same is true beneath the eye, where the skin is the thinnest on your body, and the transition from lid to cheek is a place the eye is trained to read.

Your cheek, by contrast, is a larger pad under thicker skin. It can lose a meaningful percentage before the outline visibly changes.

So the order of visible damage is roughly: temples, under-eyes, the lid-cheek junction, then the cheek proper, then the jawline. Not because those areas lost the most. Because they show it soonest.

This is also why photographs are so much crueler than mirrors. Overhead lighting drops shadow into exactly the hollows that developed. You are not imagining that you look worse in photos than you do in the bathroom. You are seeing an accurate rendering of contour change that soft frontal light conceals.

Your hand knows before your eyes do

Here's something I found out by accident, and I've never seen it written down anywhere.

I didn't see my face change. I felt it.

I was shaving. My hand went across my cheek the way it does every morning, and the shape underneath was wrong. Less there. More give. My eyes had been looking at that face daily and had adjusted right along with it — but the palm itself had a memory of the old contour, and it noticed immediately.

There's a reason for that. Gradual change is nearly invisible to daily observation; your eyes update their baseline a little each morning, and you never register the drift. Touch doesn't work that way. Your hand isn't comparing today to yesterday. It knows the shape, and it tells you when it changes.

So here's a self-check that costs nothing and works earlier than photographs.

Put your hand flat against your cheek, fingers spread, palm on the fullest part. Press gently and pay attention to three things: how much tissue is between your palm and the bone, where the lower edge of your cheekbone sits, and how

much your cheek gives when you press.

Then do the same at your temples, with your fingertips.

Do it once a month. You're not looking for a number; you're building a reference. The first time you notice a change this way, you'll have found it months earlier than a mirror would have shown you — which matters, because almost everything in Part II works better the earlier you start.

One specific thing to watch for: a dimple that stays.

Mine got bigger. That was the detail that finally made me pay attention, because a dimple is supposed to be something that appears when you smile. Mine was there with my face at rest, and I could feel it with my fingers.

That's not a dimple in the ordinary sense. That's the deep medial cheek and buccal area emptying underneath — a compartment giving up volume, with the skin above it settling into the space that opened. If you have a dimple or a hollow that used to come and go and now stays, you're not imagining it, and you're looking directly at the compartment behavior this chapter has been describing.

The hammock: why deflation looks like sagging

Here's the piece that confuses nearly everyone, including people who've read a fair amount about this.

You look in the mirror, and you don't see "hollow." You see loose. Skin that seems to have slipped downward. Folds that worsened. A jawline that softened. Naturally, you conclude

you need something tightened.

But you didn't necessarily sag. The retaining ligaments support the tissue above them. When the compartments beneath deflate, the tissue settles into the space that opened up, and it settles unevenly — because the ligaments hold at their anchor points while the unsupported areas between them drop. The result is an abrupt contour change at the compartment boundary. Deflation, in other words, presents as descent.

The clinical literature makes this point directly: loss of subcutaneous fat compartments creates the appearance of increased skin laxity, and ligamentous attenuation contributes to the appearance of tissue descent—the tear trough, the malar bags, the jowl.

Why does this issue affect you, specifically, with money on the line? Because tightening a deflated face rather than a loose one can make it look worse. You are shrinking the envelope around a space that needed refilling. This is the single most common sequencing error in this entire category, and Chapter 9 is largely about how to avoid it.

The envelope: what happened to your skin

Fat is only half the story, and the second half is less reversible.

Skin's ability to retract after being stretched depends on its structural proteins — collagen for strength and framework, elastin for recoil. Research on people who've

undergone massive weight loss has found that it generally results in depleted collagen content, or fewer properly structured collagen fibers relative to normal skin, and that these changes compromise the skin's ability to retract and conform to a smaller frame. Studies looking at skin biopsies before and after significant weight loss have also documented measurable changes in epidermal thickness.

Notice what that research was studying: massive weight loss generally, including from bariatric surgery and from non-surgical means. Not GLP-1s specifically. Which brings us to the question you actually came here with.

Is it the drug, or is it the weight loss?

The honest answer, as of now: overwhelmingly the weight loss.

The mechanism is not mysterious. GLP-1 medications reduce appetite, slow gastric emptying, and increase insulin sensitivity. You eat less. You lose fat. Fat loss is systemic — your body does not have a mechanism for protecting your face while depleting your abdomen. The facial compartments empty along with everything else, and because facial fat contributes so much to considered youth, the visible cost lands disproportionately upon your appearance.

The same changes are well documented after bariatric surgery and after large non-surgical weight loss. The nickname attached itself to one drug because of when the drugs got popular, not because the drugs do something unique.

That framing is contested at the edges, and I'd rather show you the disagreement than pretend it doesn't exist. A 2025 systematic review in *Aesthetic Surgery Journal Open Forum* treated the phenomenon as a recognizable clinical entity. A published response pushed back, arguing that the framing may run ahead of the evidence — that the underlying studies are largely lower-level evidence, that there's a lack of prospective controlled data showing a facial phenotype specific to GLP-1s, and that volume loss and laxity are well-recognized consequences of rapid weight reduction generally. There is also a separate, live question about whether GLP-1s have any direct effect on skin biology beyond fat loss — some researchers have raised the possibility of a cellular skin-aging mechanism. Treat that as an open hypothesis, not a fact. It's being investigated. It is not something to make decisions on.

Evidence rating: Strong for the weight-loss mechanism. Mixed to preliminary for any drug-specific skin effect beyond it. Why does this distinction matter practically, when your face looks the same either way?

Three reasons. It tells you that slowing your rate of loss should help, which is Chapter 3, and it's free. It tells you the enormous body of knowledge about post-weight-loss facial restoration applies to you, rather than you being a novel case nobody understands. And it protects you from anyone selling a GLP-1-specific product on the premise that your problem is chemically unique. It isn't.

The part that isn't fat

One more contributor, easy to miss because it doesn't announce itself.

Rapid weight loss costs you lean mass along with fat, particularly when protein intake drops — and on a medication that suppresses appetite, protein intake very often drops. Muscle isn't what fills your cheeks. But muscle loss changes how you carry yourself, how your face is supported at rest, and how your overall frame reads. Someone who loses 40 pounds with their lean mass largely intact and someone who loses 40 pounds shedding muscle along the way don't look the same, in the face or anywhere else.

This is the most controllable factor in the entire book, and it's the subject of Chapter 5.

Your risk profile

The variation in that Vanderbilt data — 3% to 14% volume loss across people on the same class of drug — comes from somewhere. Some of it is genetic and beyond your reach. Some of it isn't.

Work through these honestly. You're not being graded.

Score 2 points each:

You're over 45

You've lost more than 15% of your starting body weight.

You've been losing faster than 2 pounds a week.

You had significant sun exposure over your life without regular protection.

You currently smoke, or did for years.

Score 1 point each:

You've been through repeated cycles of losing and regaining.

You started with a lean or naturally thin face.

Your protein intake has decreased significantly since starting the medication.

You aren't doing resistance training.

People in your family show facial hollowing as they age.

0–4 points — Lower risk. Prevention is likely enough. Parts II and III will do most of the work for you.

5–9 points — Moderate risk. Everything in Parts II and III applies, and you should read Part IV so you know your options before you need them.

10+ points — Higher risk. Read Part IV carefully. In-office treatment is a reasonable option to plan for, not a last resort. Read Chapter 3 first regardless — rate of loss is still your cheapest lever.

An interactive version, along with the other worksheets in this book, is at flowwellglp1.clinic.

THIS WEEK'S ONE THING

Take three photographs of yourself in consistent, unflattering light — straight on, and both three-quarter angles. Overhead lighting. No filter, no smile.

You'll hate them. Do it anyway, and date them.

Then do the hand check from earlier in this chapter, and write down what you feel in one sentence. Not what you think about it. What you feel — how much tissue, where the bone edge sits, how much give.

Almost everyone reading this is working from memory of how they used to look, and memory is a bad instrument for measuring a gradual change. You need a fixed reference point, because in four months you will genuinely not be able to tell whether anything you're about to do worked. That's not a small problem. It's how people end up spending thousands chasing a change they can't evaluate.

CHAPTER 3

Rate of Loss — The Free Lever

I never once asked how fast.

That's the honest version. For the first few months, I had exactly one question, and I asked it every time I got on the scale: Is the number going down? It was. That was my whole thinking.

Nobody sat me down and said there was a speed to this. My doctor didn't raise it. The manufacturer's website didn't raise it. The Facebook groups certainly didn't raise it — in there, faster was the whole point. People posted their numbers like scores.

So this chapter is the question I didn't know to ask. It's also the cheapest chapter in the book. Everything in it costs nothing.

THE 60-SECOND ANSWER

How fast you lose is the one variable that touches everything else in this book, and it's free to change. Most clinicians point to a range of one to two pounds a week. Faster than that and you're likely giving up more muscle than you need to.

Here's the number that should get your attention. In the big semaglutide trial, roughly 40% of the weight participants lost was lean mass — not fat. In the tirzepatide trial, it was around 26% to 34%. And in the pooled analysis across 22 trials, the medications that produced the most weight loss were the worst at preserving lean tissue.

But there's a counterweight, and it's the most hopeful finding in this book. In a small case series of patients who deliberately protected their muscle — resistance training several days a week, protein kept high — one lost only 7% of lean mass while losing a third of their body weight. Two of them gained lean mass while losing weight.

The dose ladder is your mechanism. Slowing it is a conversation with your prescriber, never a decision you make alone. What “too fast” actually means.

The general guidance you'll hear is one to two pounds a week. It's a reasonable target, and I'll use it. Still, I want to be honest about where it comes from: it's a long-standing clinical convention rooted in what the body tolerates without

shedding excessive lean tissue. It isn't a precise threshold, and there's no line at 2.1 pounds where something breaks. Treat it as a speed limit rather than a cliff.

The more useful way to think about your own number is the arithmetic you did at the end of Chapter 1. Total pounds lost, divided by weeks on the medication. If that number is sitting at three, four, five pounds a week, you're moving fast enough that the rest of this chapter is the most important thing you'll read today.

What slowing down does and does not buy you.

I wish to be careful here, because a lot of writing on this subject overpromises.

What it does not do: slowing down does not change how much facial fat you eventually lose. If you're going to end up 60 pounds lighter, your face will give up roughly the same volume whether that takes eight months or eighteen. The Vanderbilt figure from Chapter 2—about 7% of midfacial volume per 10 kilograms lost—is tied to weight, not the calendar. Anyone telling you that slow weight loss protects your facial fat is selling something.

What it does do, and this is not a small list:

It protects muscle. This is the big one, and the numbers behind it are worth sitting with. Across 22 randomized trials, lean mass accounted for about 25% of total weight lost on average. In STEP-1, the flagship semaglutide trial, the figure came out near 40% — some analyses put it above 45%. In SURMOUNT-1 for tirzepatide, it ranged from about 26% to

34% depending on how it was calculated.

Somewhere between a quarter and nearly half of what comes off is not fat.

It gives your skin time. Skin retraction is slow and partial. Losing over eighteen months doesn't make your skin snap back — but it does give the tissue a longer window to adapt to a shrinking frame than losing the same amount in six months does.

It keeps you eating. This is the underrated one. Rapid loss on these medications usually means you're barely eating, and barely eating means you're not getting the protein or the micronutrients your face needs to rebuild anything. Chapter 4 is about eating enough. Chapter 3 is what makes Chapter 4 possible.

It keeps you on the drug. Slower titration means fewer intolerable side effects, and fewer side effects means fewer of the emergency conversations that end prescriptions.

The ladder

Every one of these medications is prescribed on a dose ladder, and understanding it is what turns “I wish I were losing slower” into an actual conversation.

Semaglutide for weight management starts at 0.25 mg weekly and steps up roughly every four weeks: 0.25, then 0.5, then 1.0, then 1.7, then 2.4 mg. Full escalation takes about sixteen weeks.

Tirzepatide starts at 2.5 mg weekly and steps up every four weeks: 2.5, 5, 7.5, 10, 12.5, 15 mg. Full escalation runs about twenty weeks.

The package inserts recommend stepping up every four weeks to reach the maximum dose by around the sixth prescription. That's the default your prescriber is working from.

Two things worth knowing about that default.

First, the ladder exists for tolerability, not for results. The escalation schedules were explicitly intended to reduce gastrointestinal side effects by giving the body time to develop tolerance. That's the stated purpose in the trial guidelines. Climbing it more slowly works with the drug's design, not against it.

Second, the labeling includes lower maintenance doses. If someone can't tolerate 2.4 mg of semaglutide, 1.7 mg is an approved maintenance dose. Tirzepatide has approved maintenance options at 5 mg and 10 mg. These aren't failure states. They're documented, anticipated, on-label places to live.

And plenty of people live there. In one real-world study, only about 53% of semaglutide patients ever reached the 2.4 mg dose. Around 78% of tirzepatide patients reached 15 mg. Not everyone reaches the maximum dose.

The question nobody asks: do you need the top of the ladder? Here's the finding that reframes this whole chapter.

In the network meta-analysis across those 22 trials, tirzepatide at 15 mg and semaglutide at 2.4 mg — the two maximum doses — produced the greatest weight and fat loss of anything studied. They were also among the least effective at preserving lean mass.

Read that twice. The doses that take the most weight off take the most muscle with it.

Now the part people get wrong in both directions.

You'll hear it said that more medication doesn't mean more weight loss. That isn't true, and it's worth being precise, because a reader who believes it and skips a needed dose increase has been badly served.

More medication does mean more weight loss. In SURMOUNT-1, tirzepatide produced average weight reductions of 15.0% at 5 mg, 19.5% at 10 mg, and 20.9% at 15 mg over 72 weeks. A meta-analysis of seven trials found the same dose-dependent pattern. The relationship is real, and it's consistent.

But look at the shape. Going from 5 mg to 10 mg buys you about 4.5 percentage points of body weight. Going from 10 mg to 15 mg buys you about 1.5 percentage points.

For someone starting at 250 pounds, that final step on the ladder is worth roughly 3.5 additional pounds over a year and a half.

And here's what that last step costs. GI side effects on this drug class are dose-dependent — that's stated plainly in the trial documentation, and constipation is squarely among them. The maximum doses are also the worst performers on lean

mass preservation. So the top rung charges you full price in side effects and muscle for a fraction of the weight-loss benefit.

That's the accurate version of "more isn't always better." Not that the dose doesn't work — that the last increment is where the return on it collapses.

What about your face specifically? Be careful here, because this is where the reasoning gets sloppy. No study shows that a higher dose directly thins your face. The path runs through weight: a higher dose produces more total weight loss and more lean mass loss, and facial volume tracks the weight you lose at the rate Chapter 2 described. So the dose you settle at absolutely does affect your face. It does so through the scale, not through a separate mechanism acting on your cheeks. The distinction matters because it tells you where the lever actually is.

None of this makes the top dose wrong. For someone with significant metabolic disease, the aggressive option may be exactly right, and that's a judgment for a clinician who knows your labs and your history — not for me, and not for a book. But it does mean the question is legitimate. If you're responding well at 7.5 mg, "do I actually need to keep climbing?" is a reasonable thing to put in front of your prescriber. Many people escalate on autopilot, because escalating is the default schedule, not because anyone evaluated whether they needed to.

Ask. Don't adjust. The distinction is the whole chapter.

A deliberate plateau is a strategy, not a failure.

Everything about the culture around these drugs treats a stall as a problem. The forums are full of people asking how to break through one.

Consider the opposite framing. A period of stable weight is when your body gets to catch up — when the protein you eat can go toward rebuilding rather than slowing a deficit, when resistance training produces visible returns, when skin has a chance to accommodate the frame you've got now.

If your prescriber is open to it, holding at a dose for an extra cycle rather than climbing on schedule is a legitimate thing to discuss. So is planning a stretch of intentional maintenance partway to your goal rather than only at the end. This is a conversation to have, not a plan to implement on your own.

The hard line

I've phrased everything in this chapter as something to raise with your prescriber. That's not throat-clearing. Here's why it matters.

Never change your dose on your own. Never skip doses to slow yourself down. Never restart at your old dose after a gap.

That last one puts people in hospitals. There's a published case of a woman with type 2 diabetes who stopped semaglutide, and when she restarted, went straight back to 2 mg weekly instead of re-titrating from a low dose. She developed persistent nausea and vomiting, then gastroparesis, then acute kidney injury from dehydration. She recovered — after treatment and stopping the medication.

If you have a gap in your supply, or you stop for any reason, you re-titrate from the bottom. That is not your prescriber being cautious. It's the difference between a rough month and an emergency room.

Skipping doses to “slow down” is the same kind of mistake, just in the opposite direction. It produces erratic drug levels, unpredictable appetite, and side effects you'd have avoided with a lower steady dose your prescriber actually prescribed. If you want to go slower, the tool is a lower dose, and only the person writing the prescription can give it to you. How to raise a side effect without losing your prescription

This is the section I most wish someone had written for me.

You already know the shape of the problem from Chapter 1. You report something. The visit is fifteen minutes. Your prescriber is scanning for what puts you in a hospital bed, and the fastest lever available is to stop the medication. And once you're off, coming back is expensive, slow, and requires climbing the ladder all over again.

The result is that people learn to underreport—which is worse for everyone and occasionally dangerous.

The way through is to arrive with information, not a complaint.

A complaint sounds like: I've been really constipated. That gives a busy clinician nothing to work with except a decision. Information sounds like: Since the 7.5 mg increase four weeks ago, I've gone from every other day to every four or five days: no blood, no severe pain, no vomiting. I've added fiber, and

I'm drinking more. I want to keep the medication if that's safe — is there something we can try before we change the dose?

That's the same fact pattern. But it gives your prescriber a timeline, a severity read, the negative findings that matter clinically, evidence you've already tried something, and — critically — a clear statement of what you want. Now stopping is one option among several, not the only one on the table.

Four things to bring:

A written log. Dates, symptoms, severity, what you tried. It takes two minutes a week, and it changes the entire character of the appointment.

The dose timeline. When did each increase happen, and when did the symptom start relative to it? Side effects that appear four days after a dose increase tell a different story than side effects that appear out of nowhere at a stable dose.

Name the red flags out loud. Say explicitly whether you have or haven't had: severe or worsening abdominal pain, vomiting, blood, fever, inability to keep fluids down, or no bowel movement for an extended stretch. Naming their absence is genuinely informative. Naming their presence is what gets you the care you need.

Your actual goal, stated. "I want to stay on this if it's safe" is a sentence most patients never say. Say it. And the line you don't cross. If your prescriber tells you to be evaluated, go. Everything above is about avoiding an unnecessary discontinuation, not about negotiating your way out of urgent care. Severe constipation, obstruction, pancreatitis,

gallbladder trouble, and dehydration are all real complications of this drug class, and they are the reason your prescriber reacts the way they do. Being prepared means being taken seriously — it does not mean overruling them. Ask Your Provider

Language you can bring to your next appointment. Adapt to how you actually talk.

On pace:

— “I’ve been losing about ___ pounds a week. I’m concerned about muscle loss and about what’s happening to my face. Is there room to slow this down — either by holding at this dose longer or by staying at a lower one?”

— On the top of the ladder:

— “I’m responding well at this dose. Is there a clinical reason I need to keep escalating, or is holding here reasonable for me?”

— On a plateau:

— “I’d like to spend a couple of months at stable weight to work on strength and protein before losing more. Does that make sense for my situation?”

— On a side effect you want to keep the drug through:

— “Here’s what I’m experiencing and when it started. I’ve tried _____. I want to stay on the medication if that’s safe — what can we try before changing the dose?”

If you already lost fast

Most people reading this chapter are past the point where it would have helped most. I was.

Three things are true for you.

Your rate still matters if you're still losing. Even if you're 60 pounds down, the next 20 can come off at a different speed than the first 60 did. The lever is still in your hand.

Muscle is regainable in a way that facial fat mostly isn't. This is the good news in this chapter, and it's worth the whole chapter. That case series I mentioned in the summary — three patients who prioritized resistance training four to seven days a week and kept protein high while on semaglutide or tirzepatide. One lost 33% of their body weight and only 6.9% of their lean tissue. The other two gained lean mass while losing a quarter of their body weight.

Three people are not a trial, and I'm not going to pretend otherwise. But it's a real demonstration that the outcome isn't fixed. A larger study of 106 patients on semaglutide found that lean mass dropped in the first seven months and then stabilized, grip strength improved over twelve months, and the share of patients with sarcopenic obesity fell from 49% to 33%.

The body composition you end up with is not simply handed to you by the drug.

And you haven't missed the window on your face. Parts III and IV exist for exactly this. What you can't do is undo the rate you already lost at — so if you're still moving, the

cheapest intervention in this book is still available to you today.

THIS WEEK'S ONE THING

Start the log.

A note on your phone. One line a week: date, weight, current dose, and any side effect worth mentioning. Thirty seconds. Do it for four weeks, and you'll walk into your next appointment with something almost no patient brings — a record. That record is what turns "I've been feeling bad" into a conversation where staying on the medication is one of the options. It's also how you'll know your rate of loss without having to guess.

CHAPTER 4

Feeding a Face

I had to remind myself to eat.

I want you to understand how strange that sentence is coming from me. I spent twenty-one years in a factory putting on weight. I spent six more driving nights and eating whatever the gas station had. Food was never something I had to be reminded about.

Then somewhere around day five on the medication, it just went. Not reduced. Gone. I'd sit down in front of a plate and feel full looking at it. I started pushing food away — not because I was being disciplined, but because it had stopped mattering to me.

And here's the thing nobody warned me about: when you're forty pounds down and excited about it, barely eating doesn't register as a problem. It feels like the whole point. It feels like winning.

What I ended up eating was nearly the same thing every day. A high-protein shake. Eggs. Fish.

I didn't plan that. Those were the three things I could still get down once nothing appealed to me, and I was full after a few bites. Everything else went on the plate and stayed there.

That was the beginning of everything this book is about.

THE 60-SECOND ANSWER

This is not a diet chapter. There's no food to cut here and no number of calories to hit. The problem on this medication is rarely eating too much.

Your face is built out of what you eat. Protein supports the muscle underneath it. Micronutrients build the collagen in it. Fluid determines how it looks at any given moment.

When appetite disappears, all three of those quietly fail at once — and you won't notice, because the scale is telling you everything is going great.

Three targets for this chapter:

- Protein: at least 1.2 g per kg of body weight daily, up to about 1.6 g for most adults without kidney disease.
Spread across meals, not stacked into one.
- Fluid: on a schedule, not on thirst. This medication blunts your thirst signal.
- Fiber: yes, but slowly, and never without the fluid to go with it.
- And one verdict you won't like: collagen supplements have a weaker evidence base than the industry wants you to think.

SECTION 1 — THE BUILDING BLOCKS

The protein floor

If you take one number out of this book, take this one.

At least 1.2 grams of protein per kilogram of body weight per day. Up to about 1.6 grams for most adults who don't have chronic kidney disease.

For a 200-pound person — about 91 kilograms — that's roughly 110 to 145 grams a day.

That range isn't a GLP-1-specific discovery. It comes from decades of research on fat reduction and muscle preservation in aging, and a 2026 clinical nutrition review adapted it for people on these medications, adding a per-meal target of roughly 0.3 to 0.4 g per kilogram and about 2.5 to 3 grams of leucine per meal.

The case series I mentioned in Chapter 3 — the three patients who lost substantial weight while barely losing muscle, two of whom gained it — were running 1.6 to 2.3 grams per kilogram of fat-free mass. High, and deliberate.

The kidney caveat is real. If you have chronic kidney disease, the upper end of that range is not for you, and the target has to come from your clinician. That's not boilerplate. It's the one place where more protein may actually be the wrong answer. Getting it in when you can't eat

Here's where the standard advice falls apart. Every article says eat more protein. None of them acknowledge that you're full after six bites.

What actually works:

Protein first, every time. Whatever is on the plate, the protein goes in before anything else. If you only get through a third of the meal, make sure it was the right third. This one habit does more than any supplement in this chapter.

Spread it out. Your body can't bank a day's protein in one sitting, and one sitting is exactly what you don't have. Four small hits of 25 to 30 grams beat one heroic dinner you can't finish. Meal-wise targets exist for a reason.

Density over volume. When capacity is the constraint, grams of protein per bite is the only metric that matters. Greek yogurt over regular. Eggs over toast: cottage cheese, fish, poultry, lean meat.

Liquid counts. A protein shake bypasses the fullness problem almost entirely, and on the days when solid food is impossible, it's the difference between making your floor and missing it. This isn't a compromise. It's the tool for the job. Track for two weeks, then stop. Almost nobody eats as much protein as they think. Two weeks of actually logging it will recalibrate you permanently, and then you can stop counting. This is the one place I'd suggest measuring anything — and the goal is to confirm you're getting enough, not to restrict.

The under-eating trap

Protein is the headline, but total intake matters too, and a book like this has to be careful.

I'm not going to give you a calorie number. What I'll tell you is the principle: you can eat too little to rebuild. Below a certain intake, you cannot fit the micronutrients your body needs into the food you're eating, no matter how well you choose. The 2026 nutrition review frames this as an energy floor — a minimum below which micronutrient adequacy fails regardless of food quality.

That failure doesn't feel like anything. The scale keeps moving. You feel fine. And months later you're looking at a face that has nothing to rebuild itself with.

If you're consistently unable to eat much of anything, that's a conversation for your prescriber and ideally a registered dietitian — not something to power through. A dietitian is the right person to put an actual number on your intake, and if there's one referral worth asking for on this medication, it's that one.

The micronutrients that build skin

Skin is a construction project. Collagen synthesis needs specific raw materials, and it stops when they run out. Vitamin C is not optional here — it's a required cofactor for the enzymes that cross-link collagen. Without it, the process physically

cannot complete.

Zinc and copper both feed into collagen and elastin formation.

Vitamin A drives skin cell turnover. (Its topical cousins get their own chapter — that’s Chapter 6.)

Iron carries the oxygen the whole process runs on, and deficiency shows up in skin and hair before it shows up anywhere else you’d notice.

Essential fatty acids maintain the barrier that holds water in your skin.

B12 matters generally, and it’s one of the deficiencies specifically flagged in people on these medications. The 2026 review recommends a structured lab panel for patients on GLP-1s: vitamin D, B12, iron studies, folate, zinc, and thiamine in higher-risk patients.

Ask for the panel. Don’t guess and don’t self-supplement your way through a deficiency you haven’t confirmed. Some of these — iron and vitamin A in particular — cause real harm in excess. A blood test costs less than a year of supplements you didn’t need.

Collagen supplements: the honest verdict

Evidence rating: Mixed, and weaker than you’ve been told.

I want to handle this one carefully, because collagen is the single most marketed product to people in your exact situation, and I’d make money telling you it works.

Here's what the research actually shows.

Pool all the randomized trials together and collagen peptides look good — a 2025 meta-analysis in the American Journal of Medicine covering 23 trials and 1,474 participants found statistically significant enhancements in skin hydration, elasticity, and wrinkles. That's the number every collagen company mentions.

Then the authors did something the collagen companies don't mention. They separated the trials by who paid for them. Industry-funded trials showed benefit. Non-industry-funded trials showed no effect. And the highest-quality studies showed no significant improvement in any category.

That's not proof collagen does nothing. It means industry funding has contaminated the evidence base to the point where confident conclusions aren't available. A separate 2025 meta-analysis using more sophisticated statistical methods reached a more favorable read on hydration and barrier function, with elasticity effects appearing around twelve weeks — but it was equally clear that the data don't support claims about structural anti-aging, wrinkle reduction, or dermal density. What I'd tell a friend. Collagen peptides are protein. If they help you hit your protein floor and you like taking them, that's a real benefit, and there's no harm. If you're buying them specifically to rebuild your face, the evidence is weaker than the marketing, and the same money spent on food protein does more, with more certainty.

Nobody selling you collagen is going to tell you that the good trials were the ones they paid for.

SECTION 2 — FLUID AND ELECTROLYTES

Why this belongs in a book about faces

Dehydrated skin looks thinner, duller, and more crepey than hydrated skin at the same volume.

That's it. That's the whole argument, and it makes hydration the fastest visible change you can make in this entire book. Not the biggest — the fastest. Days, not months, and it costs nothing.

The problem nobody warns you about

These medications blunt your thirst signal.

That's the part that catches people. You're not ignoring thirst — you're not getting it. Combine that with eating less (a meaningful share of daily fluid normally comes from food) and any GI losses, and you can be genuinely dehydrated while feeling nothing at all.

So drink on a schedule instead of on demand. General guidance for people on these medications runs above two to three liters a day, adjusted for your size and activity — and adjusted by your doctor if you have heart or kidney conditions where fluid intake is managed deliberately.

A bottle you refill a known number of times beats trying to remember. Attach it to things you already do: on waking, with each dose of anything, with each meal, before bed.

Sodium, potassium, magnesium

Water alone isn't the whole picture, and this is where people either overthink it or ignore it entirely.

Sodium. Eating far less food means taking in far less sodium, and if you've also had vomiting or diarrhea, you've lost more. Some of the fatigue and light-headedness people report in the first months is plain sodium depletion. This is the one place in this book where I'll tell you that salt is not the enemy — though if you have high blood pressure or heart failure, this is your doctor's call, not mine.

Potassium. Genuinely important, and the one to be careful with. Food sources are the right route for nearly everyone. Potassium supplements can be dangerous if you have reduced kidney function or take certain blood pressure medications — ACE inhibitors, ARBs, spironolactone — and this is not a supplement to add on your own judgment. Magnesium. Does double duty here, which is why it turns up in the next section too: it draws water into the intestine, which is exactly why magnesium oxide shows up on clinical lists of osmotic laxatives.

On the electrolyte products themselves. They're convenient, and there's nothing wrong with them. Read the label for sugar and potassium content, and know that for most people,

food plus salt plus water does the same job at a fraction of the price. If the packet is what makes you actually drink, it's worth it.

What This Costs: commercial electrolyte packets typically run \$1 to \$2 per serving, roughly \$30 to \$60 a month if you take one a day. A DIY version from salt, potassium-rich food, and water costs pennies. The premium buys convenience and taste, not superior chemistry.

Hydration versus puffiness

One thing to sort out, because it confuses people badly.

The fullness you see in your face first thing in the morning is fluid distribution — it settles overnight and drains through the day. It is not restored volume. It comes and goes with sleep position, sodium timing, and how you slept.

Real dermal hydration is a slower, steadier quality: skin that looks less crepey, holds light better, and feels more supple to the touch.

Judge your progress in the afternoon, in consistent light, using the same photographs and the same hand check from Chapter 2. Morning face rests in both directions.

SECTION 3 — THE GUT-SKIN CONNECTION

The absorption argument

This is the piece of the chapter people skip, and it weakens everything above it.

These medications slow gastric emptying substantially. Food sits in your stomach far longer than you're used to. That's the mechanism behind the fullness that makes the drug work — and it's also the mechanism behind the constipation. Here's why it belongs in a book about faces: you can do everything in Section 1 correctly and still not build tissue if your digestion has stalled. Protein you don't absorb doesn't become muscle. Micronutrients that don't get where they're going don't become collagen. The plumbing is upstream of everything.

Constipation shows up in roughly 5 to 7% of patients in the registration trials. Still, real-world figures run considerably higher — some sources put it at 11 to 24% — and it typically appears in the first four to eight weeks or after a dose increase. If you've had it, you're not unusual, and it's the single most common reason people quit these medications. The constipation nobody describes properly.

Here's something I had to work out for myself, and I've never seen it written down.

This isn't the constipation you've had before.

Ordinary constipation comes with an urge. You feel like you need to go, and you can't, or it's difficult. That's uncomfortable and frustrating, but the signal is working.

This medication works differently. There's no urge at all. Days go by, and your body never tells you anything. You're not straining. You're not uncomfortable in the usual way. You realize at some point that it's been a while, and then a while longer, and nothing in your body has raised its hand about it.

That has a name. Clinicians describe several patterns of constipation, and the one most associated with these medications is slow-transit constipation — the colon moves material along too slowly, and the whole signaling cycle that produces urgency never gets triggered. Your gut isn't blocked in the ordinary sense. It's idling.

Two practical consequences.

You have to track it instead of waiting to feel it. The signal you'd normally rely on is offline. Put it in the log from Chapter 3 — a mark on the days you go. It takes a second, and it's the only reliable way you'll notice a problem developing. You can get much further into trouble than you realize, precisely because it doesn't hurt in the way you'd expect. The red flags at the end of this section matter more here than they would with ordinary constipation, because your body is not going to give you the usual warning.

Fiber, done right

Here's where the standard advice actively backfires.

Everyone says, "Add fiber." But insoluble fiber without enough fluid makes constipation worse, not better — it adds bulk without improving passage. On a medication that

has already reduced your fluid intake and blunted your thirst, that's a recipe for exactly the problem you're trying to fix. Clinicians warn about it directly.

Soluble fiber is the priority. It draws water into the stool and softens it. Psyllium is the most evidence-backed option; oats, beans, apples, and ground flaxseed all contribute.

Start low and build slowly. Adding a full dose of fiber overnight can cause gas and discomfort, and it can make people abandon the whole strategy. Gradual introduction is the standard clinical recommendation, particularly for anyone who's had trouble with bulk fiber before.

The general target is roughly 25 to 38 grams a day from food and supplements combined —reached over weeks, not days.

Fluid is not optional with any of this. Fiber without fluid is worse than no fiber.

You may be the last person to notice.

My partner picked up on my stomach being hard at times before I did. I wasn't in pain, and I wasn't paying attention to my abdomen at all — I was watching a scale. She noticed it from the outside.

There's a lesson in that beyond my household. This medication turns off the signal you'd normally rely on, and it may dull your overall sense of your own body. If someone who sees you daily tells you your stomach looks or feels distended, take it as information rather than fussing. They may be working with better data than you are.

And know that a hard, distended abdomen is on the list at the end of this section for a reason. On its own and intermittent, it's common and usually nothing. If it comes with pain or tenderness, or after days of not moving, call your doctor. When fiber isn't enough

Sometimes it isn't, and there's no virtue in suffering through it.

Osmotic agents — polyethylene glycol, magnesium oxide, lactulose — draw water into the intestine and are commonly used here. Stool softeners and stimulant laxatives have their place too. The clinical threshold generally cited: if symptoms last beyond about two weeks despite doing the fluid and fiber work properly, it's time to escalate.

Bring it to your prescriber using the approach in Chapter 3 — with a log, a timeline, and the red flags named out loud. That's how you get a treatment plan instead of a discontinuation.

The red flags

Do not manage these at home. Get seen.

No bowel movement and no passage of gas for more than 72 hours

A laxative that has reliably worked for you before suddenly doing nothing

Persistent vomiting, especially of undigested food

Severe abdominal distension with pain or tenderness

Blood in the stool

Severe or worsening abdominal pain

Unexplained new symptoms alongside the constipation

Observational findings show a higher relative risk of bowel obstruction in people using these medications for weight loss compared with some other weight-loss drugs. The absolute risk stays low — but low isn't zero, and obstruction is precisely the thing your prescriber is watching for. This is the part of the book where “call your doctor” is the actual advice, not a disclaimer.

The gut-skin axis

Evidence rating: Mixed.

There's a real and active research area connecting gut health, systemic inflammation, and skin condition. It's plausible, it's being studied seriously, and it may turn out to matter a great deal.

It is not yet at the level of the protein evidence or the hydration evidence, and I'm not going to inflate it. Take care of your gut because absorption is real, because constipation is miserable, and because it's the leading reason people quit a medication that's working. If the inflammation research pans out, that's a bonus.

I went through the whole shelf.

MiraLAX. Dulcolax. Milk of magnesia. More fiber. Enemas. I worked my way down the pharmacy aisle looking for the thing that would fix it.

And here's the detail I want you to pay attention to, because at the time I read it exactly backward.

MiraLAX had worked for me before, on this same medication. Fast. This time it did nothing.

I took that as evidence I'd found the wrong tool, and went looking for a better one. What I've learned since is that it was evidence of something else entirely. A laxative that has reliably worked for you suddenly doing nothing — no urge, no result, days going by — is one of the specific patterns that should send you to your doctor rather than back to the shelf. It can look like a developing impaction or obstruction from the inside.

It wasn't, in my case. I got a good outcome. But I want to be honest: I got the good result without earning it, because I was reasoning from "this product isn't working" when I should have been reasoning from "my body has stopped responding the way it used to."

What eventually helped me was a daily gut supplement I found through a Facebook group. It took about four days, and I still take it every night.

Two caveats I'd want to share if I were you. I'd try five other things first, and constipation on these medications often eases on its own as your body adapts — four days after starting something is not proof of anything. And I have an affiliate relationship with what I take. It's on my site with that disclosure and a full ingredient list, including a couple of things worth knowing about if you have diabetes. It isn't in this book, because a product I get paid for doesn't belong in the middle of a chapter you're trusting for medical information.

THIS WEEK'S ONE THING

Weigh yourself, convert to kilograms, and multiply by 1.2.

That number is your daily protein floor in grams. Write it somewhere you'll see it.

Then, for the next seven days, do one thing: eat the protein on your plate first, before anything else. Don't count anything. Don't change what you're eating. Just change the order.

If you're only going to finish a third of the meal — and some days you will — that habit makes sure it was the right third.

CHAPTER 5

Muscle Is Structure

It doesn't care.

It doesn't care. It doesn't care.

The medication has one job, and it does that job well. It helps you lose weight. It does not check what kind of weight it's taking. Fat, muscle — it isn't sorting them. It isn't protecting anything. It's a tool doing exactly what it was built to do, and it has no opinion about what's left of you at the end.

That isn't a criticism. A hammer has no opinion about your wall.

But it means somebody has to care about the difference, and that somebody is you. Nobody else in this process is

assigned to it. Not the prescription, not the pharmacy, and — in fifteen minutes — usually not your doctor either. This chapter is about doing that job.

THE 60-SECOND ANSWER

Between a quarter and nearly half of what you lose on this medication can be lean tissue, not fat. That's the default. It is not the ceiling, and it is not fixed.

What preserves it: enough protein and resistance training at least twice a week. Both. Neither works nearly as well alone.

The entry price is lower than you think. In the first two to three months of training, one set does close to what three sets do for strength. Two sessions a week may do what three do in older adults. If you're exhausted and eating nothing, this matters enormously—you don't need a real program to start getting the benefit.

Walking is genuinely good, and it is not the answer here. It helps your health, mood, adherence, and blood sugar. It does not significantly preserve muscle. That takes resistance.

And facial exercise — I have to revise what I expected to tell you. There's better evidence than I thought. Not conclusive, and with a real conflict of interest attached. See the section.

What muscle actually has to do with your face

Allow me to be honest about a connection that books in this category tend to fudge.

Building muscle in your body does not fill your cheeks. Your biceps and your face are not connected. If someone implies that squats will restore your midface, they're selling something.

So why is this chapter here at all?

Because muscle is where a large share of your loss comes from, and every pound of it you protect is a pound that doesn't have to come off you at all. Remember the numbers from Chapter 3: lean mass ran near 40% of total weight lost in the semaglutide trial, and roughly a quarter to a third in the tirzepatide trial. That's the passive outcome. The case series of patients who trained deliberately showed one losing only 7% of lean tissue across a third of their body weight — and two who gained muscle while losing weight.

Same drug. Different result. The difference was behavior.

Because a face sits on a body, two people at the same weight, one of whom has kept their muscle and one who hasn't, do not look the same — in posture, in the neck and jawline, in how the whole person reads. That's not a facial treatment. It's a real effect, and it's worth naming honestly for what it is.

Because sarcopenic obesity is the outcome nobody wants. In the 106-patient semaglutide study from Chapter 3, the proportion of patients with sarcopenic obesity dropped from 49% to 33% over a year — and grip strength actually improved. Weight loss on this drug can leave you weaker or leave

you stronger, and which one happens is substantially up to you.

And because muscle is regainable. Facial fat mostly isn't. Of everything in this book, this is the best return on effort. Part IV costs thousands of dollars. This costs two sessions a week.

The entry price is much lower than you think.

Here's the finding that should get you off the fence.

In the first six to twelve weeks of training, a single set produces strength gains comparable to multiple sets. That's well documented. The volume conversation — how many sets, how many exercises — matters later, for people already training. It does not matter for getting started.

And in older adults, resistance-aerobic training twice a week is comparably effective to three sessions for preserving body composition.

The ACSM recommendation for older adults is at least twice weekly at moderate-to-hard intensity for eight to twelve weeks to meaningfully improve strength and lean mass. The NSCA guidance for building strength and size is one to three sets of eight to fifteen repetitions on multi-joint movements, two to three times a week.

Read those numbers against what you're probably imagining. Not an hour. Not five days. Two sessions. One to three sets. Eight to fifteen reps.

That's the whole prescription, and on a medication that has taken your appetite and probably some of your energy, that's the version that actually gets done.

Two templates

Both use bodyweight or a pair of adjustable dumbbells. Both work at home. Pick the one you'll actually do — the two-day plan you complete beats the three-day plan you abandon in week two.

The rule that matters more than the template: the last two or three reps of each set should be genuinely hard. Not painful — hard. Effort is what signals your body to keep the muscle. Comfortable reps don't send that signal, and this is the single most common reason people train for months and see nothing.

Two days a week (the minimum that works)

Each session, all of these, one to three sets of eight to fifteen:

- Push — push-up on the floor, on your knees, or against a counter; or a dumbbell press.
- Pull — dumbbell row, or a resistance band row.
- Legs — sit-to-stand from a chair, or a goblet squat
- Hinge — dumbbell Romanian deadlift, or hip bridge from the floor
- Carry — pick up something heavy and walk with it for thirty seconds.
- Twenty to thirty minutes. Two non-consecutive days.

Three days a week

Same five movements, but rotate the emphasis: upper body Monday, lower body Wednesday, full body Friday. Slightly more volume per muscle group, spread across the week.

If you get to a point where you're training consistently and want more, the research on lean mass sparing during caloric restriction points to about ten or more weekly sets per muscle group as the range where lean loss becomes minimal. That's a destination, not a starting line. Don't begin there.

Progression, which is where people fail

Add a little each week. One more rep, or slightly more weight, or one more set. Write it down — the same log from Chapter If you don't ask your body for more, it has no reason to keep what it has.

Protein makes this work — or wastes it.

Training without adequate protein largely wastes the training.

A randomized trial in adults 55 and over compared high protein (1.3 g/kg) against normal protein (0.8 g/kg), with and without resistance training three times weekly, during a ten-week weight loss program. The combination is what preserves fat-free mass. Either alone does less.

Practically: hit the floor from Chapter 4 — at least 1.2 g per kilogram, more if you're training and don't have kidney disease — and get some of it reasonably near your session. Precise timing is oversold. Total daily intake drives the result. About walking

I've been telling people for a while now that you don't have to do a bunch of exercising, but you do have to walk at least. Keep the body moving.

I was half right, and I want to correct the other half here.

Walking is genuinely valuable. It helps your blood sugar, cardiovascular health, mood, and sleep, and — maybe most importantly on this medication — it keeps you in the habit of doing something for yourself on days when you feel like doing nothing.

But walking does not preserve muscle. That job requires resistance. If walking is the only thing you're doing, you're getting real health benefits while your lean mass comes off anyway.

So keep walking. Add two days of something with resistance in it. That's the version I should have been telling people. Facial exercise: I was wrong about this

Evidence rating: Mixed. Revised upward.

I expected to put this under "Mostly Marketing." Then I read the research, and I have to give you a more complicated answer.

The study. In 2018, researchers at Northwestern published a pilot study in *JAMA Dermatology* on facial exercise in women aged 40 to 65. Participants learned a set of facial exercises and performed them 30 minutes daily for eight weeks, then every other day through week 20. Blinded dermatologists rated before-and-after photographs using validated scales. The result. Significant progress in both upper and lower cheek fullness. Raters estimated participants' average age at 50.8 at baseline, 49.6 at eight weeks, and 48.1 at twenty weeks — nearly three years of perceived age, reversed. The proposed mechanism is that the exercises produce hypertrophy of the cheek muscles, and the lead author noted that cheek muscles are among the largest in the face, which is why change showed up there first.

Cheek fullness is the exact thing you're reading this book about. I'm not going to bury that finding because it doesn't fit the verdict I planned.

Now the problems, and they're real.

It's a pilot study with no control group. Twenty-seven women enrolled. Sixteen finished. Eleven dropped out — a 40% dropout rate — which tells you something important about the regimen that the headline doesn't.

A commercial conflict is embedded in it. One of the co-authors founded the specific face yoga program used in the study. That's the same problem as the collagen literature in Chapter 4: the confirming evidence comes with an interested party attached.

The study focused on aging women, not people who've lost substantial weight. Age-related facial change and rapid-weight-loss facial change are not the same problem, as Chapter 2 explained. Extrapolating from one to the other is an assumption, not a finding.

And the ceiling is low by definition. Facial muscles are small. Hypertrophying them adds a small amount of volume. It does not refill an emptied fat compartment. If the Vanderbilt data says you've lost 9% of your midfacial volume and most of that was fat, muscle hypertrophy addresses a fraction of it.

So here's my honest position. If you've got 30 minutes a day and you'd rather spend it on your face than on almost anything else, this isn't a scam, and there's a real pilot study behind it. It's free, and the risks are minimal. But the time cost is substantial; the dropout rate in the one good study suggests most people won't sustain it, and the same 30 minutes spent on a resistance session twice a week does considerably more for your overall body composition — which affects your face too, and everything else besides.

If you're choosing between them, train your body. If you're doing both, that's fine.

One caution. Some dermatologists raise the theoretical concern that repetitive facial movement may deepen expression lines over time. It hasn't been demonstrated. It hasn't been ruled out either.

Gua sha, facial massage, and lymphatic work.

Evidence rating: Mixed.

These do something. They move fluid, they increase local circulation temporarily, and they feel good — and feeling good is nothing when you don't like your face.

What they don't do is restore volume. Any visible change is fluid redistribution, and it comes back within hours. If you like the ritual, keep it. Just don't confuse a morning depuffing with a structural result, and don't spend serious money on tools that do what your hands do.

The one genuine caution: aggressive pulling on skin that's already lost its underlying support isn't obviously helpful—use light pressure.

THIS WEEK'S ONE THING

Do one set of sit-to-stands.

Sit in a dining chair, stand up without using your hands, sit back down. Repeat until the last two are hard. That's the set. You're done.

That's it — that's the whole assignment. Not a program, not a gym, not a plan. One set, today.

The research says that in the first months, one set does most of what three sets do. So the gap between nothing and something is by far the biggest gap you will ever close in this book, and you can close it before you finish this page. Then write it down, and do it again in three days.

CHAPTER 6

The At-Home Topical Protocol

Here's the entire contents of my bathroom, as far as my face was concerned: shaving gel.

That's it. Fifty-two years old. Twenty-one years in a factory, six more driving nights. Soap in the shower, shaving gel at the sink, and that was the whole program. If you'd told me at forty that I'd one day own a bottle of vitamin C serum, I'd have laughed at you.

And there's something I only noticed later. Shaving is how I found the problem in the first place — my hand on my own cheek, feeling a shape that had changed. The one thing I did for my face every single day was also the only reason I caught it.

So allow me to be straight with you about what this stuff can and can't do. I came into it a skeptic, and I'm not going to oversell it now.

THE 60-SECOND ANSWER

Nothing in this chapter will put volume back in your face. Not one product. If a label suggests otherwise, that's marketing.

Topicals improve the quality of the skin where the volume used to be—thickness, texture, tone, how it holds light. That's a real and visible thing. It is not the same thing as fullness.

Four things have serious evidence behind them:

Sunscreen. The single most studied and most effective product in this entire category. In a 4.5-year randomized trial, the daily-use group showed no detectable increase in skin aging.

Prescription tretinoin. The gold standard for photoaged skin since 1986. Over-the-counter retinol is the slower, gentler version.

Vitamin C, at 10–20% L-ascorbic acid.

A functioning moisture barrier.

Everything else is a supporting player or a marketing claim, and I'll tell you which is which.

One honest caveat up front: essentially all of this evidence comes from studies of sun-damaged and aging skin, not from people who've lost 60 pounds in a year. Nobody has run those trials yet.

The ceiling, stated plainly.

Let's get this out of the way before you spend a dollar.

Your face lost volume because fat compartments emptied. That's Chapter 2. No cream refills a fat compartment. No serum restores the deep medial cheek. The molecules in a topical product do not travel to your fat pads and rebuild them, and any product implying otherwise is lying to you in a way that is both specific and deliberate.

So why is this chapter here?

Because you have two problems, not one; volume is the first. The envelope is the second — and the envelope is the part that's actually reachable from a bottle.

Skin that's thicker, better hydrated, and better organized reflects light differently than skin that's thin and crepey. It sits better over whatever structure is underneath it. Two people with identical volume loss, one with well-maintained skin and one without, do not look the same.

That's the honest promise of this chapter: not fuller, but better. It's worth doing. It's just not what the ads claim. The four that work

1. Sunscreen — and it isn't close

If you do one thing from this chapter, this is it.

In 2013, researchers published a randomized trial in *Annals of Internal Medicine* that followed 903 adults in Queensland, Australia, over four and a half years. One group was asked to apply broad-spectrum sunscreen every morning. The other group used it at their discretion, as most people do.

The daily group showed no detectable increase in skin aging over four and a half years. None. Skin aging was 24% lower than in the discretionary group.

That is a remarkable result, and it's why every serious source ranks sunscreen as the highest-evidence anti-aging product that exists. Not the most exciting. The most effective.

Evidence rating: Strong.

What to use: broad-spectrum, SPF 30 or higher, every morning, regardless of weather or season. The one you'll actually wear beats the one you bought because of the label.

A note for the men reading this, because someone should say it: you are statistically far less likely to be doing this than the women reading the same page, and it costs you. If you drove nights for years, you got less sun than most — but “less” isn't “none,” and a windshield doesn't block everything.

2. Retinoids

Tretinoin has been the reference treatment for photoaged skin since 1986, and the mechanism is well characterized: it increases type I procollagen production and inhibits the enzymes that break collagen down.

A 2024 systematic review of 32 studies covering 1,236 patients graded retinol and vitamin C as Grade A for anti-aging efficacy.

Evidence rating: Strong.

Prescription tretinoin is the strongest version, and it's cheap as a generic. Ask your doctor — this is a normal request and usually doesn't require a dermatologist.

Over-the-counter retinol and retinaldehyde are the gentler route. Slower and weaker, but real. Reviewers describe the retinoid precursors as a reasonable second-line option for people who can't tolerate tretinoin.

How to actually use it without quitting in two weeks. Start twice a week at night, not nightly. Pea-sized amount for the whole face. Moisturizer after. Expect some flaking and irritation in the first month and build up frequency slowly. Most people who “can't tolerate retinoids” started nightly at full strength and got a chemical-burn's-worth of irritation. Two safety notes. Retinoids increase sun sensitivity, which is another reason for sunscreen. And tretinoin is contraindicated in pregnancy — that's not a caution, it's a hard rule.

3. Vitamin C

Grade A in the same systematic review, and it does two jobs: it's a required cofactor for collagen cross-linking (the same role it plays from the inside, in Chapter 4), and it's an antioxidant that reduces photodamage.

Evidence rating: Strong.

What to look for: L-ascorbic acid at 10–20%. It oxidizes — if your serum has turned brown or orange, it's done. Opaque, air-restrictive packaging matters more than a fancy label—apply in the morning, under sunscreen.

4. The moisture barrier

This is the least glamorous item on the list and the most immediately noticeable.

Rapid weight loss frequently comes with drier, more crepey skin, and dryness reads as thinner and older than it is. Restoring barrier function doesn't change your structure — it changes how the surface looks and feels, and it works in days rather than months.

Evidence rating: Strong for hydration and barrier function. Weak for anything structural. Don't confuse the two. What matters: ceramides, glycerin, occlusives. Apply to slightly damp skin. A basic drugstore moisturizer applied regularly outperforms an expensive one used sporadically, and it isn't close.

The tier below

These are not scams. They're not what the marketing implies.

Niacinamide — Mixed, useful. Supports barrier function, evens tone, generally well tolerated at 2–10%. Reviewers note there's no convincing evidence of a specific molecular target for controlling skin aging. Fine as a supporting player. Not a headline act.

Peptides — Mixed. Short peptides signal fibroblasts, and there's a real mechanism. Clinical evidence is moderate, and formulation and concentration determine everything —

which is precisely what you can't verify from a label. AHAs (glycolic, lactic) — Mixed, decent. Reasonable evidence for texture and fine lines at 5–10%. A sensible addition once your barrier is stable, and a bad idea while your skin is irritated from a retinoid.

Bakuchiol — Mixed, promising, under-replicated. Marketed as a natural retinol alternative. The same 2024 systematic review gave it Grade C for limited evidence. Worth considering if you genuinely can't tolerate retinoids. Not a reason to skip the ones with Grade A behind them.

Growth factor topicals — Mostly Marketing. Also Grade C in that review, and among the priciest products in the category. The gap between what these cost and what's been demonstrated is the widest on this page.

Stem cell extracts, gold, exotic botanicals — Mostly Marketing. No robust human anti-aging data. This is where the money goes, and the evidence doesn't follow.

Topical hyaluronic acid is not filler.

This confusion is so widespread and so profitable that it deserves its own section.

Hyaluronic acid injected by a provider is a gel placed under your skin, in a specific compartment, in a measured volume, to physically restore structure. That's Chapter 8.

Hyaluronic acid in a serum sits on the surface of your skin and holds water there. It's a good humectant. It makes skin look plumper and better hydrated for a few hours.

Same molecule. Entirely different intervention. One occupies space in your face; the other occupies space on it. If you're using an HA serum and wondering why your cheeks aren't filling in, that's why. It was never going to. Evidence rating: Strong for hydration. Not applicable for volume.

If you shave

Nobody writes this part, so here it is.

A razor is mechanical exfoliation. Every morning you're scraping the top layer of your skin off along with the hair — which is a real advantage in one way, since shaved skin absorbs products more readily, and a real problem in another, because a retinoid on freshly shaved skin stings badly and irritates faster.

The simple fix is timing. Shave in the morning. Use your retinoid at night. That creates maximum distance between the two, and it's the solution for most people.

A few other things worth knowing:

Don't apply anything active immediately after shaving. Vitamin C on a fresh nick will let you know. Give it an hour, or move it to the days you don't shave.

Moisturizer after shaving isn't optional if you're on a retinoid. You've disrupted the barrier twice in one day. Sunscreen still goes on, over everything, including freshly shaved skin.

If you're getting irritated, the retinoid is usually blamed, and the razor is usually at least half responsible. Try dropping to shaving every other day before you give up on the retinoid.

Skip a shave when your skin is angry. A day of stubble costs you nothing.

And if you shave your neck — where a lot of men get the most irritation — be conservative with actives down there: thinner skin, more razor passes, more reaction.

Your neck exists

Almost everybody stops at the jawline.

The neck and décolletage have thinner skin, less oil, and — for most people — decades of sun exposure with almost no protection, because we've all been taught to protect our faces and nothing else.

After significant weight loss, the neck often shows change earlier and more visibly than the face does. And a well-maintained face over an untreated neck is one of the most recognizable tells in this entire field.

Everything above applies below the chin. Sunscreen especially. Retinoids more cautiously, since the skin there is thinner and irritates more easily — start once a week.

The routine

Reprinted as a card in the back of the book.

Morning

Rinse or gentle cleanser.

Vitamin C serum

Moisturizer

Broad-spectrum SPF 30+ — face, neck, décolletage, and the backs of your hands

Evening

Gentle cleanser

Retinoid (start 2x/week, build up)

Moisturizer

That's it. Six products, four of which are optional, and one of which is the only non-negotiable item in the chapter. Build it in this order, one at a time, three to four weeks apart: sunscreen first, then moisturizer, then retinoid, then vitamin C. Adding everything at once means that when your skin reacts, you won't know what caused it — and you'll blame the wrong product.

What This Costs: the entire evidence-backed routine runs roughly \$50 to \$120 for a two-to-three month supply, less if your tretinoin comes through insurance as a generic. Products costing ten times that do not perform ten times better, and in this category the correlation between price and evidence is close to zero.

The honest limitation

I've rated four things Strong in this chapter, and I want to be precise about what that means.

Every study I've cited was conducted on aging or sun-damaged skin. None were conducted on people who lost 60 pounds in a year on a GLP-1 medication. Those trials don't exist yet.

The extrapolation is reasonable — the skin biology is the same, and the collagen and barrier mechanisms don't care why your face changed. But it is an extrapolation, and I'd rather you hear that from me than discover it later and wonder what else I smoothed over.

THIS WEEK'S ONE THING

Buy sunscreen and put it on tomorrow morning.

Not the routine. Not four products. One bottle, broad-spectrum, SPF 30 or higher, whatever's at the drugstore, and put it on your face and your neck before you leave the house.

It's the highest-evidence intervention in this entire book — higher than anything in Part IV, which costs thousands — and it's the one people skip because it isn't exciting.

Four and a half years of daily use produced no detectable skin aging at all in the people who did it. Start tomorrow.

CHAPTER 7

Devices and Gadgets — Signal vs. Marketing

When I sat down to research this chapter, I did what you'd do. I searched for clinical evidence on at-home skin devices. Nearly every result on the first page was published by a company that sells at-home skin devices.

They looked like research summaries. Headlines about clinical evidence, evidence-graded guides, systematic reviews cited by number, a medical reviewer's name at the top. Read one, and you'd come away thinking you'd learned what the science says. What you'd actually read was an advertisement wearing a lab coat.

This is the loudest category in the entire book, and the volume has nothing to do with the strength of the evidence. So let's separate them.

THE 60-SECOND ANSWER

The problem with this whole category is power. Home devices are deliberately built weaker than clinical ones — that’s what makes them legal to sell you without a license. Weaker energy means smaller effects, and sometimes no effect at all.

LED red light has the best combination of real biology, decent home-use data, and near-zero risk. Modest results, 12 weeks, only if you’re consistent and the device actually puts out enough light.

Microcurrent produces temporary effects that fade. Pleasant, not structural.

At-home radiofrequency has genuine clinical backing at clinical power levels. Whether your \$300 handheld attains those levels is the entire question, and it usually isn’t answerable from the box.

At-home microneedling: don’t. This is the one hard no in the chapter.

And “FDA-cleared” does not mean “proven to work.” It’s the most misunderstood phrase in this industry. See below. The power gap

Here’s what explains this entire category.

Clinical devices are operated by trained people under medical supervision because they deliver enough energy to injure you if used incorrectly. That same energy produces the result. Home devices are sold to anyone, without training or supervision, which means they must be built weak enough that an untrained person can't hurt themselves with them. That's not a conspiracy. It's the trade-off that makes home devices legal. But it means the question is never "does this technology work?" It's "does this technology work at the power level they're allowed to sell me?"

LED is the clearest example. Clinical systems commonly deliver 100+ mW/cm². Many consumer masks deliver 20–40 mW/cm² — and a great many don't disclose their output at all, which should tell you something on its own. When a company advertises that a clinical study proved red light works, and their mask delivers a third of the energy the study used, they haven't lied. They've just let you finish the sentence yourself.

"FDA-cleared" is not "FDA-approved"

Learn this distinction, and you'll never read a device ad the same way again.

FDA-approved means the manufacturer submitted evidence that the device is safe and effective for its stated purpose, and the agency reviewed it. This is a high bar, and most consumer beauty devices don't clear it.

FDA-cleared means the manufacturer demonstrated their device is substantially equivalent to something already on the market. It's principally a safety and equivalence pathway.

It doesn't require proof that the device does what the marketing claims.

Almost every home beauty device you'll see is cleared, not approved. "FDA-cleared" on a box tells you the thing probably won't hurt you. It tells you little about whether it works.

LED and red light therapy

Evidence rating: Mixed — the best of this category.

The biology here is real and well characterized. Photobiomodulation is genuinely studied, and a 2025 consensus review in the *Journal of the American Academy of Dermatology* endorsed it for several clinical indications — androgenic alopecia, wound and pressure ulcers, peripheral neuropathy, acute radiation dermatitis. Those are clinical applications with clinical equipment, not consumer masks, but the underlying mechanism isn't in doubt.

For home use specifically: trials in photoaging show statistically significant but modest improvements in wrinkles and texture over 12 weeks—and that result depends on consistent daily use and adequate device output.

Three honest observations:

Published support for home LED tightening loose skin comes mostly from small, open-label, single-investigator studies and combined-modality designs where LED is paired with topicals or other technologies in the same protocol. When a study tests four things at once and gets a result, you don't know which one did it.

More is not better. Overuse may blunt the benefit rather than increase it. This is not a device where doubling the sessions doubles the outcome.

It's the lowest-risk option in the category. LED doesn't emit UV, and it doesn't carry the hyperpigmentation risk that radiofrequency, IPL, and certain lasers carry for people with deeper skin tones. If you have Fitzpatrick IV–VI skin and want to try a home device, this has the least downside.

If you buy one: insist on a published irradiance figure in mW/cm^2 . If the company won't tell you the output, that's your answer.

Microcurrent

Evidence rating: Mixed, leaning weak.

Low-level electrical current, marketed for lifting and toning. The evidence base is thin — largely small studies, observational work, and narrative reviews rather than robust randomized trials.

What it appears to do: produce a temporary tightening effect that people can see, and that fades over hours to days. That's why the “before and after” photos in the marketing are always taken the same day.

What there isn't good evidence for: lasting structural change to a face that has lost volume.

If you enjoy the ritual and the short-term effect before an event, it's harmless, and it works for that. Just understand you're renting an appearance, not building one. And in

the context of this book, remember Chapter 2: what you lost was fat volume. Stimulating surface muscle doesn't address that.

At-home radiofrequency

Evidence rating: Mixed, and unusually hard to assess honestly.

Radiofrequency as a clinical technology has genuine support, and I'll cover it properly in Chapter 9 where the evidence is solid and the devices are operated by people trained to use them. The mechanism is heat: RF warms the dermis enough to cause collagen to contract immediately and to remodel over the following months.

The question for a home device is whether it delivers enough of that heat, deep enough, for long enough. That's a physics question, and it has a real answer—but I couldn't find a trustworthy one.

Here's what happened when I tried. The most prominent “evidence-based guides” to at-home RF are published by companies that manufacture at-home RF devices, complete with citations, medically reviewed bylines, and a recommendation for their own product at the end. I found systematic reviews cited by number in that material, and when I looked up the primary sources to verify them, I couldn't confirm them independently.

So I'm not going to repeat numbers I can't stand behind. What I'll tell you instead is the honest state of things: the technology is real, the clinical version works, and whether

your \$300 handheld reaches the necessary energy is a question the seller is not a neutral party on.

If you go this route, treat 12 weeks of steady use as the minimum trial, and understand that you're running an experiment rather than following evidence.

Contraindications matter here in a way they don't with LED: pregnancy, implanted electronic devices, and — relevant if you read ahead to Chapter 8 — potential interaction between heat-based treatments and existing dermal filler. Talk to a provider before combining them.

At-home microneedling: the one hard no

Evidence rating: Skip.

This is the only product category in this book I'd tell you to avoid, and the reasoning is clear.

You cannot sterilize it. Properly sterilizing a needling device requires an autoclave. Rinsing with alcohol between uses does not get you there. Microbes sit between the needles and in the handle mechanism, and you are pressing them into open channels in your skin.

Rollers drag. A professional pen punctures vertically. A roller enters at an angle, travels, and exits at an angle — tearing rather than puncturing. Dermatologists demonstrating this on test surfaces show scrapes alongside the punctures. Needle length is a trap. Consumer rollers are sold from 0.2 mm up past 2.0 mm. Anything at or above 1.0 mm is designed for clinical settings where depth, pressure, and angle are controlled.

At home, inconsistent pressure means the same needle reaches wildly different depths across your face.

Documented complications are permanent: infection ranging from folliculitis to cellulitis requiring antibiotics, scarring, and post-inflammatory hyperpigmentation—a particular risk for medium and deeper skin tones that can take months or years of professional treatment to soften.

The trade-off is bad. Short needles that are safe enough for home use don't reach the depth where meaningful collagen remodeling happens, and needles long enough to reach it aren't safe in an untrained hand. You're accepting real risk of permanent damage in exchange for an effect too shallow to matter.

RF microneedling done properly, in a clinic, is in Chapter 9. That's the version worth your money.

Cooling tools, ice rollers, and compression masks

Evidence rating: Mostly Marketing.

They reduce puffiness. Puffiness is fluid; fluid comes back, and — as Chapter 4 covered — morning puffiness was never volume in the first place.

They feel good, they cost little, and there's no harm in them. Just don't file them under treatment.

Five questions before you spend \$400

What is the output, in numbers? For LED, mW/cm². For RF, the temperature and depth it claims to reach. If the company won't publish it, they have a reason.

Who paid for the evidence they're citing? Follow it to the source. If the "clinical guide" lives on the seller's own domain, it isn't evidence — it's a brochure.

Cleared or approved? Now you know the difference.

What's the protocol, and will I actually do it? Most require near-daily use for at least 12 weeks. Be honest about whether that's you. The dropout rate on demanding home regimens is the quiet reason most of them fail.

What's the return policy? Any company confident in a 12-week result should be comfortable with a 90-day return window. Many aren't.

If you only buy one thing

I said I'd commit, so here it is.

Buy nothing in this chapter until you've done Chapter 6 for three months.

Daily sunscreen and a retinoid have Grade A evidence and cost under \$100. Nothing in this chapter comes close to that, and the honest comparison isn't LED versus microcurrent — it's a \$400 device versus \$100 of higher-evidence skincare plus \$300 toward a single professional treatment in Part IV.

Suppose you've done that and still want a device: LED. Best biology, real if modest home-use data, lowest risk profile, and the only one in the category safe across all skin tones without pigmentation concerns. Buy one that publishes its irradiance. Give it 12 weeks of daily use before you judge it.

And keep the receipt.

THIS WEEK'S ONE THING

Take one device you already own, or one you've been thinking about buying, and find its output specification. Not the marketing page. The specification — the actual number, in real units.

If you can find it, you've learned something useful about the product. If you can't find it after ten minutes of looking, you've learned something more useful about the company.

That ten minutes is the most valuable skincare research you'll do this month, and it applies to every purchase you make for the rest of this book.

CHAPTER 8

Putting Volume Back

Before this chapter starts, you should know something about who's writing it.

I haven't had any of this done.

No filler. No biostimulator. Nothing injected into my face. I'm not writing this as somebody who sat in the chair and can tell you how it felt.

I'm writing it as somebody who spent a long time trying to work out what these treatments actually do, what they honestly cost, and what happens when they go wrong — because I got tired of every answer coming from people who make money on the answer.

That's the reason this chapter exists at all. Almost everything written about facial fillers comes from someone who sells them. I don't. The reference list at the back is there so you can check me.

It also means I can't tell you whether it's worth it. Nobody can tell you that. What I can do is make sure you walk into that room knowing what to ask.

THE 60-SECOND ANSWER

This is where the money is, so read carefully.

Two different tools. Hyaluronic acid fillers occupy space immediately and can be dissolved if you don't like them. Biostimulators don't fill anything — they trigger your own collagen to build over months, and they can't be undone. The guidance changed recently, and it matters to you. A January 2026 international consensus specifically on medication-driven weight loss recommends prioritizing biostimulators over pure HA filler for patients like you — and recommends starting them during weight loss rather than waiting. That's close to the opposite of what the field said two years ago.

Not everyone agrees. Plenty of experienced providers still say wait until your weight has been stable for three to six months. I'll give you both cases and the reasoning.

Budget: roughly \$2,000–\$4,000 for an initial combined series. HA filler runs \$600–\$1,800 per syringe, depending on product and market.

The risk that matters: vascular occlusion is rare — somewhere between 1 in 2,000 and 1 in 100,000 injections — but when it causes blindness, treatment usually doesn't reverse it. In the largest review, vision was unchanged in 70% of cases after treatment.

And “non-surgical” does not mean “not medical.” See the box.

Non-surgical is not the same as not medical.

Every treatment in this chapter is a medical procedure. A needle or cannula goes under your skin, near the arteries that supply your eye.

The words “med spa,” “aesthetic,” and “non-invasive” have done enormous work to make people forget this. Don’t. The question you’re deciding is not what product to buy. It’s who you are letting inject something into your face, and that decision matters more than any other choice in this chapter — more than the brand, more than the price, more than the technology.

Chapter 10 covers how to evaluate that person. Read it before you book anything.

Hyaluronic acid fillers

What they are. A gel made of hyaluronic acid — a substance your body already produces — placed under the skin in a measured volume, in a specific location, to occupy space that has emptied physically.

What they do for you specifically. In the GLP-1 pattern from Chapter 2, that means midface, temples, and sometimes the lid-cheek transition. Placed well, they restore structure and change how light falls on your face.

Results are immediate. You walk out different. Depending on the product and area, results last roughly 6 to 18 months. And here is the property that matters most in your situation:

they're reversible.

HA filler can be dissolved with an enzyme called hyaluronidase. If it's placed badly, migrates, you hate it, or your face keeps changing underneath it, there's an undo button. Nothing else in this chapter has one.

For someone whose weight is still moving, that reversibility is not a minor feature. It's the entire argument for choosing HA first.

Biostimulators

What they are. Poly-L-lactic acid (Sculptra) and calcium hydroxylapatite (Radiesse). These don't fill space. They act as a scaffold that prompts your own fibroblasts to produce collagen, and the volume you end up with is tissue you grew. How it goes. Typically two to three sessions, four to six weeks apart. Results build over three to six months after the final session and can last two to three years, with a touch-up every year or two.

The trade-off, stated plainly: slower, more gradual, more natural-looking as it comes in — and not reversible. There is no hyaluronidase for collagen. If you build too much, or build it in the wrong place, you wait it out.

The timing question — and an authentic disagreement

This is the most useful section in the chapter, and I want to show you the disagreement rather than pick a side and hide the other one.

The traditional position, still held by many good providers: wait until your weight has been stable for three to six months before significant treatment; in practice, that's often 12 to 18 months after starting the medication. The logic is obvious — treating a face that's still changing means paying to correct a moving target, and you may end up paying twice. The newer position, from a January 2026 international consensus specifically on medication-driven weight loss: don't wait.

A word on what that means, because the distinction matters. A consensus panel is a group of experienced clinicians surveyed for their judgment and asked to agree on recommendations. It is not a controlled trial. In this one, a majority of participating clinicians reported seeing significant skin impact from medication-driven weight loss, and the panel agreed that biostimulator treatment should be initiated during active weight loss — to tackle underlying collagen degradation rather than waiting for the scale to settle.

That's expert opinion, and expert opinion is worth something. It is not the same thing as proof, and you should weigh it accordingly.

The same body of guidance recommends prioritizing biostimulators like PLLA over pure HA filler for patients in your situation — on the reasoning that what's happening isn't only space; it's structural collagen loss, and a product

that rebuilds collagen addresses both problems at once.

There's a second argument for PLLA during active loss that I find genuinely persuasive: it doesn't carry the overcorrection risk that HA does. A syringe of HA placed today is a fixed volume in a face that's still shrinking around it. Collagen you stimulate builds gradually and in proportion, which is a closer match for a moving target.

How I'd reconcile them for you:

If your weight is still moving significantly, be cautious about large—volume HA filler— not because it's dangerous, but because you may be buying a result that stops fitting. Conservative HA in a small area to bridge a gap is a reasonable thing to discuss. Aggressive volumization is not.

If you're at or near a stable weight, both tools are on the table, and the choice is about how fast you want results and how much you value reversibility.

Whatever your provider recommends, ask which of these two positions they hold and why. A provider who can explain the trade-off is one worth trusting. If they haven't heard of the disagreement, that's telling.

Now, the part you need to know about the evidence behind that recommendation.

Galderma commissioned the consensus panel — the company that makes Sculptra, the leading PLLA biostimulator. A Galderma employee is among the listed co-authors. That's disclosed in the publication and in Galderma's own announcements, and I'm repeating it here because you

won't find it in the med spa blog posts citing the guidelines.

The trial evidence follows the same pattern. The study most often cited for PLLA in GLP-1 patients enrolled 41 subjects — 39 women and 2 men — with cheek wrinkles and midface contour deficiencies after GLP-1 weight loss. It was open-label, meaning everyone knew what they were getting and there was no control group. The products tested were Sculptra and two Restylane fillers. All three are Galderma products. A separate Galderma post-marketing analysis reports that 85.7% of patients appeared less gaunt or sunken at nine months.

And the outcome measures are judgments, not measurements. In this field, a “response rate” usually means an evaluator or the patient looked at a face and graded it as improved on a scale. That's a legitimate way to assess an aesthetic result. It is not the same kind of number as the CT and MRI volume measurements in Chapter 2, and it shouldn't be read as if it were. So here's the honest summary: the recommendation to favor biostimulators for people like you is supported by a small open-label study, a manufacturer post-marketing analysis, and an expert consensus — and all three trace back to the company that sells the product.

That doesn't make the recommendation wrong. Sculptra may well be the right choice for you, and the reasoning behind it — that this is structural collagen loss, not just space — is sound on its own terms. That means independent confirmation still doesn't exist. Nobody without a financial stake has tested it and published the results.

This is the fifth time in this book that the strongest evidence for a product has come from the people selling it, after the collagen supplement trials in Chapter 4, the face yoga research in Chapter 5, and the device “clinical guides” in Chapter 7. It doesn’t mean the finding is false. It means you can’t use it to check whether the finding is true.

Ask your provider whether they know who funded the guidelines they’re quoting. It’s a fair question, and the good ones will know the answer.

PRP and PRF

Evidence rating: Mixed — and commonly oversold for the wrong thing.

Platelet-rich plasma and platelet-rich fibrin involve drawing your blood, spinning it, and re-injecting the concentrated portion.

What it appears to do: improve skin quality — texture, tone, and some measure of thickness.

What it does not do: restore meaningful volume. If you have emptied fat compartments and someone offers PRF as the solution, that’s the wrong tool for your problem. It’s frequently marketed to people in exactly your situation, based on that misunderstanding.

Worth considering as a skin-quality adjunct. Not as an answer to hollowing.

Polynucleotides and skin boosters

Evidence rating: Mixed, evidence still maturing.

A newer category — injectables intended to improve skin quality and hydration from within rather than add structural volume. They’ve grown quickly; show promise, and have a younger evidence base than the marketing.

The category has the same “different problem” issue as PRF: these address the envelope, not the fill. Useful alongside volume restoration. Not a substitute for it.

The restraint principle

Let’s name the thing you’re actually afraid of.

You’re not afraid of looking like you had work done. You’re afraid of looking like that — the overfilled, pillowy, slightly inflated face that reads instantly as too much. Everyone knows the look. Nobody wants it.

Here’s the reframe that prevents it: the goal is structural support and light reflection, not inflation.

Your face didn’t lose “fullness” in the abstract. Specific compartments emptied, and they emptied unevenly — superficial more than deep, according to the imaging in Chapter 2. Restoring the structure means putting a small, correct volume in a specific place so the tissue above it sits where it used to. It doesn’t mean adding fullness until the hollow disappears.

The overfilled look comes from chasing the hollow directly—treating the shadow instead of the structure that casts it—and adding volume until the shadow goes away. By then you’ve added far more than was ever lost.

What to say at your consultation: “I want to look like myself at this weight. I’d rather do too little and come back than do too much.” Say it out loud. A good injector will be relieved.

And know that you can always add more. Restraint costs you a second appointment. Overcorrection costs you months, or a dissolving procedure, or — with a biostimulator — a long wait.

The risks, stated properly.

Every source that wants to sell you this describes complications as “rare.” That’s true. Here’s what it actually means. Vascular occlusion. Filler enters or compresses a blood vessel and blocks blood flow. Reported rates vary widely — roughly 0.001% to 0.05% of injection procedures, with severe complications estimated far lower still. It’s genuinely uncommon.

What it can cause is not uncommon in its severity: tissue death, skin necrosis, permanent scarring, and — through arteries connecting to the eye — blindness.

The blindness data deserves your attention, because the numbers are sobering. In the American Academy of

Ophthalmology’s review of vision-threatening filler complications, the treatments used to reverse vision loss — hyaluronidase by several routes, thrombolytics, hyperbaric oxygen, and others — were described as safe but usually

not effective. Across 196 cases with recorded vision outcomes, vision was unchanged in 70%, improved in 28%, and worsened in 2%.

That's the part that changes how you should think about this. The rescue does not dependably work. That means prevention—meaning provider skill and anatomical knowledge—is nearly the entire safety story.

In that same review, the injection sites most associated with vision loss were the nose (40%), forehead (25%), glabella (12%), and temple (9%). The central and upper midface accounted for 84% of cases.

Read that last one again. Temples are a primary treatment area for GLP-1-related volume loss, and they're among the higher-risk regions on the face. That is not a reason to avoid treating them. It's a reason to be extremely deliberate about who does it.

One thing worth asking about: cannulas — blunt-tipped instruments rather than sharp needles — appear to reduce vascular occlusion risk significantly. Ask your provider what they use in the midface and temples, and why. Delayed nodules. Firm lumps that can appear months to years after treatment, with reported incidence ranging from 0.02% to 4%. Many are treatable, and non-inflammatory ones are typically managed with hyaluronidase.

Migration. Filler moving from where it was placed. More associated with certain products and certain areas. The tear trough is the hardest area on the face: thin skin,

complex anatomy, and unforgiving results. If someone offers to do your under-eyes as a first treatment on a first visit, pause.

What This Costs

Prices vary substantially by market, product, and provider experience. Treat these as orientation, not quotes. HA filler: roughly \$600–\$1,800 per syringe. Most people need more than one syringe to change a midface meaningfully —often two to four across a treatment.

Biostimulator series: typically two to three sessions.

A combined initial protocol using both, aimed at meaningful volume restoration, commonly runs \$2,000–\$4,000 to start.

Ongoing: HA needs repeating every 6–18 months.

Biostimulator results last two to three years with periodic maintenance.

Insurance doesn't cover any of this. It's cosmetic, without exception.

The number that matters isn't the syringe price. It's the annual cost. A treatment that costs less but needs repeating twice a year isn't cheaper. Ask every provider for the yearly figure, not the visit figure.

THIS WEEK'S ONE THING

Don't book anything. Write down your budget instead.

An actual number — what you could spend on this in a year without it hurting. Not what you wish you could spend. Do that before you sit in any consultation, because a consultation is a sales environment even when the person is excellent and honest. Walking in with a number already decided is the single best protection you have against being talked into a bigger plan than you came for.

Bring the photos from Chapter 2, too. And read Chapter 10 before you make the appointment.

CHAPTER 9

Tightening What's Loose

Look in the mirror right now and answer one question.

Is your face empty, or is it loose?

Most people can't answer that, and it's the most expensive question in this book to get wrong. The two problems look nearly identical in a mirror. They feel identical emotionally. Completely different technologies treat them, and buying the wrong one doesn't just waste your money — it can make your face look worse.

Here's the rule: you can't tighten your way out of a volume problem.

THE 60-SECOND ANSWER

Chapter 8 fills. This chapter shrinks. If your face is deflated rather than loose, shrinking the envelope around the space is the wrong direction.

RF microneedling has the largest evidence base and mostly works on the lower face, jawline, and neck. One study measured it at about 37% of the laxity improvement a facelift produces — which is the single most useful expectation-setting number in this chapter.

Focused ultrasound (HIFU) delivers roughly 18% to 30% improvement in skin laxity, again concentrated in the lower face, neck, and around the eyes, with side effects in under 5% of patients.

Timeline: three to six months, not three weeks. You're waiting on collagen remodeling, and nothing makes it faster. Realistic bar: these are modest improvements for mild-to-moderate laxity. Patient satisfaction is highest among people who wanted subtle change. It runs lowest among people who wanted a facelift without surgery.

Empty versus loose

Chapter 2 established that you have two separate problems: compartments that emptied, and an envelope that didn't shrink to match. Chapter 8 addressed the first. This chapter

addresses the second.

Doing them in the wrong order — or doing only the second — is the most common expensive mistake in this whole field. Why tightening a deflated face can backfire. Energy-based treatments work by contracting tissue and stimulating collagen so the skin envelope draws in. If the volume underneath is intact, that's exactly what you want. If the volume underneath is gone, you've shrink-wrapped the surface tighter over a hollow — also, the hollow can end up more defined, not less.

How to tell which you have. Use the hand check from Chapter 2. Press gently on the fullest part of your cheek with your palm.

Not much tissue between your palm and the bone, and the hollow stays put when you smile → volume problem— chapter 8.

Tissue is there, but it moves and gathers, especially along the jawline and under the chin → laxity—this chapter. Both → very common after significant weight loss, and the sequencing question at the end of this chapter is the one you need.

And be honest that a mirror at arm's length is a poor diagnostic tool. This is a real reason to pay for a consultation with someone who assesses faces for a living, even if you don't book a treatment that day.

RF microneedling

Evidence rating: Mixed to Strong for mild-to-moderate laxity. Weak for anything dramatic.

Tiny insulated needles deliver radiofrequency energy into the dermis at a controlled depth, producing heat that contracts existing collagen and provokes new collagen over the following months. It's the clinical, controlled version of the thing Chapter 7 told you not to do at home — and the difference between them is precisely the control.

What the evidence shows. A 2026 systematic review in the *Journal of Cosmetic Dermatology* pulled together twenty studies. Sample sizes ran from 9 to 133 patients, averaging around 32. Most protocols used one to three sessions spaced three to four weeks apart, at energy depths from 0.5 to 3.5 mm.

The tightening effect was most prominent on the lower face, jawline, and neck. One study documented measurable change in jaw and neck angles. Another found bipolar RF microneedling improved elastometry of the jawline and cheek in 44 patients, with physicians grading the treated skin as looking about 2.6 years younger.

Now, the number that should set your expectations. In a study where fifteen patients received intradermal RF microneedling, five blinded evaluators graded the result at 37% of the mean laxity improvement produced by a facelift. About a third of a facelift. That is a genuine, meaningful result for a treatment with no incisions and minimal recovery time — and it is nowhere near what the marketing photographs imply.

Two things about that evidence base worth knowing. In the 2026 review, participants were overwhelmingly female — 531 women against 27 men — with a mean age of about 50. If

you're a man, the data on people like you is thin. And devices and protocols varied widely across studies, which means "RF microneedling" isn't one treatment. The device, depth, energy, and operator all change what you get.

Safety. A large retrospective series covering hundreds of treated facial areas reported no hyperpigmentation, hypopigmentation, scarring, or prolonged erythema. That's reassuring, with the caveat that it's Level 4 evidence from a single practice.

Focused ultrasound

Evidence rating: Mixed to Strong, and better documented than I expected.

Focused ultrasound delivers energy to a precise depth beneath the skin without penetrating the surface, heating tissue at focal points to trigger contraction and collagen remodeling.

A 2025 systematic review in *Aesthetic Surgery Journal* examined 45 clinical trials and cohort studies published between 2010 and 2024. The findings:

- Skin laxity improvements of 18% to 30%, concentrated in the lower face, neck, and the area around the eyes Side effects in fewer than 5% of patients — transient redness, swelling, or mild discomfort
- Compared favorably against mild surgical outcomes as a noninvasive lifting option

- The honest limitation, as the authors note: standardizing treatment protocols is still a key challenge, particularly around optimal energy settings and patient selection. Long-term efficacy needs more research, especially among varied skin types.
- Translation: the technology works, and how well it works for you depends heavily on who operates it and how they set it. Nonablative RF without needles
- Evidence rating: Mixed, with low-to-moderate confidence.
- This is the category Chapter 7 promised to source properly, and here it is.

A systematic review of radiofrequency treatments for facial rejuvenation examined 15 studies. Two quantified firmness and laxity specifically. In one, 52.9% of 50 patients undergoing monopolar RF reported improved laxity themselves. In another, blinded assessment of 40 patients using a standard aesthetic improvement scale found visible firmness improvement in 100% of participants at 12 weeks.

But the reviewers graded their confidence in that finding as low to moderate, employing a formal evidence-appraisal framework. That's the researchers telling you their own result isn't as solid as the numbers make it look, and it's the kind of caveat that never survives into a marketing page.

Note also the difference between those two numbers — 52.9% of patients said they saw improvement; blinded raters said 100% showed it. When patients and evaluators disagree that sharply, it usually means the change is real but

subtle enough that the person living with it doesn't always notice.

That's worth knowing before you spend money.

Lasers and resurfacing

Ablative and fractional resurfacing lasers work primarily on skin quality—texture, tone, pigmentation, fine lines—rather than laxity or volume.

If your complaint after weight loss is crepey, dull, uneven skin, this category is relevant. If your complaint is hollowness or sagging, it isn't the right tool, and you should look at Chapter 8 and the first half of this one.

Resurfacing generally involves more downtime than the technologies above and carries a higher pigmentation risk for deeper skin tones. Both are conversations to have with a provider who treats your skin type regularly.

Timelines, honestly

Every technology in this chapter works by provoking your body to build collagen. That process has its own schedule, and nothing on the market speeds it up.

Immediate: some tissue contraction from heat, visible right away, and largely temporary

Weeks 2–6: swelling settles; you may look worse than baseline for a stretch

Months 3–6: the actual result arrives as new collagen matures

Beyond: gradual decline, with maintenance typically discussed annually

Judge nothing before three months. Use the dated photographs and the hand check from Chapter 2, because at month three you will not remember accurately what your face looked like at month zero. Nobody does.

Who does well, and who doesn't

Good candidates: mild-to-moderate laxity, mainly in the lower face, jawline, and neck. Realistic expectations. Readiness to wait months. Volume already addressed, or not a significant problem to begin with.

Poor candidates: severe laxity after major weight loss. The literature is clear: these treatments target mild-to-moderate laxity, aren't substitutes for surgical facelift procedures, and satisfaction is highest among people seeking subtle improvement.

If you've lost a hundred pounds and have significant excess skin, no energy device will fix that. I'd rather tell you plainly than let you spend \$3,000 finding out. That conversation belongs in Chapter 10, where we talk about when surgery is the honest answer.

Sequencing, if you need both

Most people reading this have both problems. The order matters.

Volume first, then tightening. Restore structure, wait for it to settle, then assess what laxity actually remains. A surprising amount of apparent looseness resolves once the tissue underneath has something to sit on — which is the whole lesson of

Chapter 2's hammock section.

Don't do both in the same visit. Heat-based treatments and dermal filler can interact, and you also want to know which treatment produced which result.

And leave time between them. If you tighten first and fill second, you may have shrunk an envelope you're about to need. What This Costs: RF microneedling commonly runs \$800–\$1,200 per session, with most protocols using one to three sessions. Focused ultrasound is commonly priced per treatment with similar or higher ranges depending on the area and device. As with Chapter 8, ask for the annual cost including maintenance — not the per-session price.

THIS WEEK'S ONE THING

Do the hand check and write down one word: empty, loose, or both.

That's it—one word.

Whatever you decide, note the date and keep it with your photographs, because when you sit down in a consultation and someone starts describing what they'd recommend, that one word is your reference point. If a provider proposes tightening and you wrote "empty," that's not a reason to argue — it's a reason to ask them to explain the difference between what they're seeing and what you felt.

The best providers will be glad you asked. That's information too.

CHAPTER 10

Building Your Plan

Everything up to here has been information. This is the chapter where you decide something.

Three things determine whether you get a good result: the order you do things in, the money you're willing to spend, and the person you let touch your face. That third one matters more than the other two combined, and it's the one almost nobody researches properly.

So take this chapter to the appointment. That's what it's for.

THE 60-SECOND ANSWER

Sequence: foundations → skin quality → volume → tightening. In that order, for the reasons Chapters 3 through 9 laid out.

The single most important fact about your provider: in every state, injectables are the practice of medicine and require physician involvement — but how much involvement varies enormously, and in many states the physician never has to be in the building.

The credential trap: no ABMS-recognized board has “cosmetic surgery” in its name. The American Board of Cosmetic Surgery is not ABMS-recognized. Plenty of practitioners advertise “board-certified” on that basis.

The one question that separates serious practices from the rest: Do you keep hyaluronidase on site, and do you have a written vascular occlusion emergency protocol?

And sometimes the honest answer is surgery. It’s in here, because a book that can’t say so isn’t worth trusting. The sequence

1. Foundations (free). Rate of loss, protein, fluid, resistance training. Chapters 3 through 5. If you’re still losing, nearly all your available benefit lives here, and skipping it to book a treatment means paying to correct a problem you’re still actively creating.

2. Skin quality (\$50–\$120). Sunscreen, retinoid, vitamin C, barrier. Chapter 6. Wait at least three months before you judge it.

3. Volume. Chapter 8. This is the main event for most people reading this book, because volume is what you actually lost.

4. Tightening. Chapter 9. Last, deliberately — because tightening an envelope you’re about to fill is backward, and because a fair amount of apparent looseness resolves once there’s structure underneath it again.

The most common expensive mistake is starting at step 4. “Loose” is the word that comes to mind in the mirror, so tightening is what people go shopping for.

Three stages

Still losing. Foundations, hard. Skincare, started now. Hold off on significant volume work — with the caveat from Chapter 8 that biostimulators are the exception; some clinicians now recommend starting during active loss. If your face is causing you real distress, conservative HA filler in a small area is a legitimate bridge; it’s reversible, and you’re not committing to a final result. Aggressive volumization is what to avoid.

Just stabilized — weight steady for three to six months. This is the sweet spot. Everything is on the table, your face has settled enough to assess accurately, and you’re not treating a moving target. Start with volume, reassess at three months, then decide about tightening.

A year or two out. Same sequence, but be realistic that your skin has had time to adapt to its new frame. What you're looking at now is closer to your baseline than what you saw at six months. That's information, not defeat — it means what you treat is what was actually lost, not a temporary state.

Three budgets

Under \$500 — and this genuinely does something.

Sunscreen, a retinoid (generic tretinoin through your doctor is cheap), vitamin C, a decent moisturizer. Protein sorted. Two resistance sessions a week. Possibly one consultation, paid for, with no treatment booked — purely to get a professional assessment of whether your problem is volume, laxity, or both.

That last item is the highest-value \$150 in this book. You are not able to reliably diagnose your own face in a mirror. \$500–\$3,000 — one thing, done properly.

Everything above, plus either a conservative HA filler treatment in the highest-impact area, or a biostimulator series if you and your provider decide that fits your situation.

One area. One provider. Reassess at three months. At this budget, the temptation is to spread it across three treatments and get an unconvincing amount of each. Concentrated beats scattered.

\$3,000+ — a combined plan.

Volume restoration across multiple areas, possibly combining HA and a biostimulator, with tightening considered later once the volume has settled. Chapter 8 put a

typical combined initial protocol at roughly \$2,000–\$4,000.

At this level, ask every provider for the annual cost, including maintenance. HA needs repeating every 6 to 18 months. A cheaper treatment that repeats twice a year isn't cheaper.

Who is legally allowed to inject you?

This is the part almost nobody researches, and the answer is messier than you'd expect.

There is no federal standard. Most states have no med-spa-specific statute—injectables are regulated as the practice of medicine under state medical and nursing boards.

Every state requires physician involvement where injectables are used, either through a medical director or a cooperative or supervisory agreement. But the required degree of presence varies enormously. In many states, the supervising physician doesn't have to be on the premises, and may never meet you.

Who can hold the needle depends on your state:

- Physicians (MD/DO) — full scope everywhere.
- Nurse practitioners — depends on which of three tiers your state falls into. In full-practice-authority states (Arizona, Colorado, Oregon, Washington, and roughly twenty others), an NP can own a med spa, perform the examination, and inject with no physician involved. In reduced or restricted states, they need a collaborative agreement.
- Physician assistants — under a supervising physician agreement with written delegation.

- Registered nurses — can inject under a physician's or NP's order or a standing protocol in most states.
- Estheticians and medical assistants — generally cannot perform injectables anywhere. If an esthetician offers to inject you, something is wrong.
- A good-faith examination is typically required before any prescription drug is administered — a history, an assessment, and a documented plan. If nobody took a medical history before your first injection, that's not a skipped formality. That's a legal requirement that got skipped.

What “medical director” actually means. It's a supervisory role — the physician whose license the practice operates under. It does not mean they perform your treatment, review your chart, or are in the building. In California, for example, a nurse practitioner cannot serve as medical director even with full practice authority because that role is defined as the practice of medicine.

None of this means a nurse injector is worse than a physician injector. Some of the best injectors in the country are NPs and PAs who do nothing else all day, and some physicians inject occasionally and poorly. Volume of experience with your specific procedure matters more than the letters after your name. What you're entitled to know is who is responsible, what their training is, and who handles it if something goes wrong.

The board certification maze

If you get this far and are considering surgery, this section matters enormously.

Any licensed physician can legally perform cosmetic surgery, regardless of their training. Board certification is the mechanism that's supposed to tell you what someone actually trained in — and the terminology has been thoroughly muddled.

The American Board of Plastic Surgery is the only ABMS-recognized board for plastic surgery.

The American Board of Cosmetic Surgery is not ABMS-recognized. As the American Society of Plastic Surgeons puts it: no ABMS-recognized certifying board has cosmetic surgery in its name.

That matters because someone can complete a residency in a different field completely — dermatology, obstetrics, oral surgery — take additional cosmetic training, and legitimately advertise as “board-certified.” The words are true. They don't mean what a reader assumes.

For facial work specifically, two credentials are meaningful: ABPS and the American Board of Facial Plastic and Reconstructive Surgery, which requires a residency in otolaryngology or plastic surgery, a fellowship, and at least 200 facial cosmetic procedures as primary surgeon within three years.

How to check, in five minutes: get the full name and spelling, look it up in the official ABMS or ABPS directory, cross-check against a specialty society directory, and screenshot what you find with the date.

The question to ask out loud: “Which board certified you, and does ABMS recognize it?” A properly certified surgeon answers instantly and without irritation.

The consultation question list

Bring this. Photograph it. A good provider will not mind.

On them:

What’s your license and training, and how many of these specific treatments do you perform in a month?

Who is the supervising physician here, and are they on site?

Which board certified you, and is it ABMS-recognized?

On safety — ask all three:

4. Do you keep hyaluronidase on site?

5. Do you have a written vascular occlusion emergency protocol, and is the staff trained on it?

6. Do you use a cannula or a needle in the midface and temples, and why?

On me:

7. Looking at my face, is my main problem volume, laxity, or both?

8. What would you do first, and what would you deliberately not do yet?

9. Can I see before-and-afters of patients with my pattern of loss, my age, and my skin tone?

On money:

10. What does this cost this year, including maintenance?

11. What happens if I don't like it — is there a correction policy, and who pays?

On timing:

12. Should I wait for my weight to stabilize, or start now?

Why do you take that position?

Questions 4 and 5 are the ones to weight most heavily. Some states — Florida among them — explicitly require filler programs to keep hyaluronidase on site, maintain a written vascular occlusion protocol, obtain consent covering vascular occlusion risk, and train staff on complication recognition. Many states require none of that.

Chapter 8 explained why this is the question that matters: when filler causes vision loss, the rescue treatments usually don't reverse it. Minutes matter, and a practice without the antidote in the building is a practice betting nothing will go wrong.

The provider you want is the pleased one you asked. An irritated provider has told you something important for free. Red flags

Pressure to decide today, or discount pricing that expires when you leave

No medical history taken before proposing treatment.

Vague answers about supervision — who the medical director is should not be a hard question.

No hyaluronidase on site

Before-and-afters that are all one demographic, or that have obvious illumination and perspective changes between shots

Advertising that implies more clinical authority than the license allows

An esthetician offering injectables

Groupons and package deals on medical procedures

A plan much bigger than what you came in for. This is the most common one. You arrive asking about your cheeks and leave with a proposal for six areas.

When the honest answer is surgery

I've spent nine chapters on non-surgical approaches, and I'd be doing you a disservice if I pretended they cover everything. They don't treat significant excess skin. If you've lost a very large amount of weight and have substantial laxity — skin that hangs and folds rather than merely looking soft — no filler, biostimulator, or energy device will fix that. Chapter 9 was direct about this: these treatments target

mild-to-moderate laxity and are not substitutes for surgical procedures, and satisfaction is highest among people wanting subtle change.

Spending \$3,000 on energy treatments for a problem that needs surgery is how people end up bitter about this entire field. They conclude nothing works. What actually happened is they bought the wrong category.

Signs the conversation should include a surgeon: skin that hangs rather than sags, a neck that doesn't respond to anything, jowling that persists after volume restoration, or a provider who's already treated you twice with modest results. A consultation with an ABPS-certified plastic surgeon costs a consultation fee and commits you to nothing. Plenty of them will tell you that you don't need surgery yet — and that answer, from someone who profits from the other answer, is worth paying for.

Surgery has real risks, real recovery, and real cost. It's also sometimes the honest answer, and you deserve to hear that from a book that isn't selling either option.

If you're unhappy with a result

It happens, and most of the time it's fixable.

Give it time first. Swelling distorts everything for two to six weeks after filler. Biostimulator results build over three to six months. A large share of "I hate it" resolves on its own, and the photos and hand check from Chapter 2 are how you tell the difference between a bad result and an unsettled one.

Go back to the person who did it, and be specific. Not “I don’t like it” — “this side looks fuller than the other” or “there’s a lump here.” Most providers will correct their own work.

HA filler can be dissolved. That’s the safety net Chapter 8 described, and it’s the argument for choosing HA when you’re uncertain.

If something is wrong urgently — pain, skin color changes, vision changes, or blanching after an injection — that is not a wait-and-see situation. Contact the provider immediately, and if you can’t reach them, go to an emergency department. Tell them exactly what was injected, where, and when.

If the provider won’t engage, a second opinion from a different practice is reasonable, and complaints go to your state medical or nursing board.

THIS WEEK'S ONE THING

Book one paid consultation. Don't book a treatment.

Tell them at the outset: "I'm here for an assessment. I'm not making a decision today." Bring your photographs, your one word from Chapter 9, and this question list.

Then go home and sit with it for a week.

The single greatest protection you have against a bad outcome is refusing to decide in the room. Everything about a consultation — the mirror, the lighting, the enthusiasm, the person who has been good to you for forty-five minutes — is built for deciding in the room.

A good provider will still be there next week. That's how you'll know.

CHAPTER 11

Your Face at Your New Weight

You're going to reach a point where the scale stops moving, and you have to decide what this face is now. Not what it was. Not what it's going to be after one more treatment. What it is, at this weight, in this life you went and built.

That's a harder chapter to write than the ones about syringes, and it's the one I'd most like you actually to read.

THE 60-SECOND ANSWER

Give it 6 to 12 months before you conclude anything. Some of what bothers you at month three softens on its own as tissue adapts.

Everything in Part IV is a subscription, not a purchase. HA filler repeats every 6–18 months. Biostimulators last two to three years with touch-ups. Budget annually or don't start.

If you stop the medication, expect regain — but the picture is more mixed than the headlines. Trials show about two-thirds of lost weight returning within a year. Real-world data on people who stopped filling prescriptions shows that most don't regain. Both are true, and the difference matters.

That's why reversible options exist. Filler placed at your lowest weight has to live in whatever face you have in two years.

And if you got healthy and still can't stand looking at yourself, that's worth taking seriously — as its own thing, not as

something one more syringe will solve.

The adaptation window

Before you spend anything else, know this: your face at month three is not your face at month twelve.

Skin continues adapting to a smaller frame for months after the weight stops moving. Tissue settles. Swelling from any treatment resolves fully. And your own eye recalibrates — a face that looked shocking to you in the second month starts looking like your face by month ten, not because it changed but because you did.

So the honest recommendation is to wait if you can. Six months of stable weight before major decisions. Twelve if you're able.

That's an unsatisfying thing to be told when you don't like what you see. But people in this field spend a great deal of money treating month three, and some of what they're treating would have resolved on its own.

Use the photographs and the hand check from Chapter 2 rather than the mirror. The mirror updates its baseline daily and lies to you in both directions.

Maintenance is the real cost.

Almost nobody budgets for this correctly, so let's be blunt. Nothing in Part IV is permanent.

HA filler: repeats every 6 to 18 months

Biostimulators: two to three years, with a touch-up session typically every one to two years

Energy-based tightening: results build over three to six months, then decline gradually; maintenance usually discussed annually

Skincare: ongoing forever, which is one more argument for the fact that it's also the cheapest thing that works. Do the annual arithmetic before your first treatment, not after. A \$2,500 initial protocol that needs \$1,200 of maintenance a year is a \$1,200-a-year commitment for as long as you want to keep the result. That's a fine thing to decide to spend money on. It's a bad thing to discover in year two.

And decide in advance what happens if you stop. Filler dissolves gradually and your face returns to where it was — not worse, but not maintained. Nobody tells you that at the consultation, because the consultation is about starting. If you stop the medication

Most people do. Real-world data suggests up to 65% of GLP-1 users discontinue within a year of starting, for reasons ranging from cost to side effects to insurance changes.

So what happens?

The trial data is stark. In the STEP-1 extension, people who stopped semaglutide regained about two-thirds of their lost weight within a year. In SURMOUNT-4, participants who switched to placebo after 36 weeks of tirzepatide regained 14% of their body weight, while those who continued lost a further 5.5%. A post hoc analysis published in late 2025 found that most people who withdrew regained 25% or more of what they'd lost within a year — and that the cardiometabolic gains reversed along with it.

But here's the part the headlines skip. A 2026 analysis of real-world records from a large health network found something different: among patients whose prescriptions stopped, weight regain occurred in a minority — roughly 39% of semaglutide patients and 27% of tirzepatide patients in the year afterward. The majority did not regain.

Why the gap? Trial withdrawal is abrupt and controlled. Real life isn't. People taper, switch medications, restart, or change how they eat and move in ways a trial deliberately prevents. The trial answers “what happens if the drug is removed and nothing replaces it.” Real life usually involves something replacing it.

What I take from both together: regain is common and you should plan for it, but it is not a foregone conclusion, and what you do around stopping matters. The clinical advice is consistent — don't stop abruptly, intensify the habits before you stop

rather than after, arrange follow-up in the first month off, and know that restarting is an option because these medications remain effective on subsequent courses.

And one thing worth saying plainly: weight regain after stopping is a biological response to stopping treatment. It is not a character failure. You did not do it wrong.

What regain means for your face

This is where the choices in Chapter 8 come home.

Filler placed at your lowest weight has to live in whatever face you have in two years. If you regain meaningfully, the volume you paid to add sits on top of volume that came back on its own, and the result can read as overfilled even though nothing was overfilled at the time.

That is the strongest practical argument for hyaluronic acid over a biostimulator when your future weight is genuinely uncertain: HA can be dissolved. Collagen you stimulated cannot be un-stimulated.

It also argues for restraint — the principle from Chapter 8. Under-treat, reassess, add later. A face that changes twice is easier to manage if you never committed hard to either version.

And it argues against weight cycling for reasons beyond the metabolic ones. Repeated cycles of loss and regain were on the risk scorecard back in Chapter 2 for a reason. Each cycle asks your skin to stretch and retract again, and skin gets worse at that over time.

The part that isn't about your face

Here's what I want to say to you about it.

There is something genuinely disorienting about doing everything right and not liking the result. You got your health back. Your labs improved. You can do things you couldn't do. And you're standing at a mirror feeling ungrateful about a face — and then feeling bad about feeling bad, because who complains about succeeding?

That reaction is common, and it doesn't make you vain. Your face is how you're recognized by other people and by yourself. Changing it fast is disorienting, even when the change came from something good. You're allowed to be pleased about your health and unsettled about your appearance at the same time. Those aren't in competition.

Two things I'd ask you to watch for.

The first is whether the mirror is taking more of your day than it used to. Checking, angling, evaluating. That habit tends to grow rather than settle, and it's easier to notice it early than to unwind it later.

The second is whether treatments are chasing a target that keeps moving. If you've had a good result and still feel the same way you did before, another syringe is unlikely to fix it. That's not a criticism — it's a well-documented pattern, and providers see it often enough to have a name for it.

If this has a hold of you — if it's changing how you sleep, whether you go out, how you are with people who love you — that is worth talking to somebody about. A therapist or your doctor, to start. Not because something is wrong with you, but because this is a real adjustment and people do it better with help. There's no version of that conversation you'd regret having.

And I'd say this too. The nurse in my car wasn't worried about my face. She was worried I was going to die. Whatever I think of my cheeks, she was right about the thing that mattered, and I'm here to be annoyed about my image

because I listened to her.

That's worth keeping somewhere in view.

Photographs lie in both directions.

One practical thing before we finish.

You now have dated photographs from Chapter 2. Use them properly.

They'll make you feel worse than reality if you compare a badly lit overhead shot to how you remember looking. Memory is flattering, and photographs aren't.

They'll make you feel better than reality if you compare a treatment result taken at week two — swollen, and photographed by someone hoping for a good outcome — with a baseline shot taken on your worst day.

The rules that make photographs useful: same light, same time of day, same angle, no smile, no filter. Three shots — straight on and both three-quarters. Every three months.

And the same reference point every time. Not “do I look good today.” Is this different from the photograph? That's the only honest way to evaluate whether anything you've spent money on has worked.

Where this leaves you

Allow me to put the whole book in a paragraph.

Your face thinned because your body did. How much of what you lost was muscle rather than fat, and how well the skin over it held up, were never fixed — and if you're still losing, they still aren't. The cheapest interventions have the

best evidence: rate of loss, protein, fluid, resistance training, sunscreen. The expensive ones work too, but only to a smaller extent than the advertising suggests. And much of what's sold to people in your situation does very little, which you can now verify yourself.

You know how to check. That's the part I'd keep if you forget everything else. Ask who paid for the study. Ask what the number actually measures. Ask whether "cleared" means "proven." Ask what it costs per year, not per visit. Ask whether the practice has the antidote on hand.

I did call her.

She walked me through it — what the drug was, what it did, what to expect. She'd seen enough patients on it to talk about it plainly. That phone call is the reason there's a book.

I haven't seen her in a while. I do other things for income now, and I go home at night.

I've thought about that more than I expected to. The reason I can't run into her is the same reason I'm not eating chocolate out of a gas station bag at two in the morning. The car ride that started all this doesn't happen anymore, because the life that produced it doesn't either.

I'd like her to see my face. I think she'd say something true about it, the way she did the first time, whether I wanted to hear it or not.

But I know what she'd actually care about. And it was never my cheeks.

THIS WEEK'S ONE THING

Take the photographs again.

Same light, same angles, no smile. Then put them next to the ones you took when you started this book.

Whatever they show, you'll be looking at real information instead of memory — and you'll be doing it with a set of questions nobody handed you when you started this.

That was the whole point. Not a face. A way of deciding.

Back Matter

APPENDIX A

Compounded GLP-1 Medications

Status as of publication. Between 2022 and 2025, compounded versions of semaglutide and tirzepatide were widely available at a fraction of brand-name pricing. That was legal because the FDA had these drugs on its official shortage list, which temporarily permitted pharmacies to compound copies.

That window has closed:

Tirzepatide was removed from the shortage list in December 2024

Semaglutide followed in February 2025

Compounding grace periods for pharmacies ended in spring 2025 — 503A facilities in April, 503B outsourcing facilities in May

On April 30, 2026, the FDA proposed permanently excluding semaglutide, tirzepatide, and liraglutide from the list of bulk ingredients large compounding facilities may use. The public comment period closed June 29, 2026

Several major compounding operations stopped producing these medications in early 2026

Compounded products still exist in narrower circumstances, and some telemedicine platforms still offer them in some states. Reporting on which companies currently offer what is inconsistent enough that I won't name any — check directly. Five things to know before you use a compounded product:

1. Compounded is not generic. These products are not FDA-approved. They haven't undergone the testing for safety, effectiveness, and manufacturing quality that branded versions did. A generic drug is proven equivalent to the authentic drug. A compounded drug is not.

2. Formulations vary, and some differ from the approved drug. The FDA has warned that certain compounded products use salt forms — semaglutide sodium, semaglutide acetate — that are not the same substance as the approved medication.

3. “Personalized” blends are largely a workaround. Some pharmacies add vitamin B12 or amino acids and describe the result as a personalized formulation. The FDA has said directly that adding ingredients doesn't make it a different drug. A study published in March 2026 identified a tirzepatide-B12 compound present in mass-produced blends that isn't found in the FDA-approved product. Whether it matters is unknown — and unknown is not the same as safe.

4. A prescription is always required. Compounding pharmacies fill prescriptions; that is what they are. Any website selling these medications with no prescriber involved is not a compounding pharmacy. The FDA has documented counterfeit products and has issued warning letters to telemedicine platforms over misleading claims.

5. The adverse event record is real. As of February 28, 2025, the FDA had logged over 455 adverse event reports associated with compounded semaglutide and over 320 for compounded tirzepatide. A considerable part involved dosing errors

with multi-dose vials — patients drawing up ten times the intended dose — and some required hospitalization. Questions to ask any provider offering compounded product:

Which pharmacy fills this, and are they licensed in my state?

Are they LegitScript certified?

What exactly is in the vial, including any additional ingredients?

Is it supplied pre-filled or as a multi-dose vial I draw from myself?

Who is the prescriber, and how do I reach them?

None of this is an instruction not to use compounded medication. For people whose insurance denies coverage, the alternative is frequently nothing at all, and that has its own costs. It's an instruction to know what you're buying.

APPENDIX B

Treatment Comparison

Treatment Best for Onset Lasts Reversible Typical cost

Sunscreen Preventing further damage

— Ongoing n/a \$10–25

Retinoid Skin quality, texture 3–6 months Ongoing use n/a \$15–60

Vitamin C Skin quality, photoprotection

2–3 months Ongoing use n/a \$20–60

HA filler Volume, immediate Immediate 6–18 months Yes \$600–1,800/syringe

Combined initial protocols using filler plus biostimulator commonly run \$2,000–\$4,000. Nothing in this table is covered by insurance. Ask for annual cost, not per-visit cost.

APPENDIX C

Your Risk Scorecard

These weightings are my judgment based on the risk factors described in the literature. This is not a validated clinical instrument — it's a way of organizing what you already know about yourself.

Score 2 points each:

- ☐ **You're over 45**
- ☐ **You've lost more than 15% of your starting body weight**
- ☐ **You've been losing faster than 2 pounds a week**
- ☐ **Significant lifetime sun exposure without regular protection**
- ☐ **You currently smoke, or did for years**

Score 1 point each:

- ☐ **Repeated cycles of losing and regaining**

☐ **You started with a lean or naturally thin face**

☐ Your protein intake declined significantly since starting the medication

☐ **You aren't doing resistance training**

☐ **Family history of facial hollowing with age**

Your score: _____

0–4 — Lower risk. Prevention is likely enough. Parts II and III will do most of the work.

5–9 — Moderate risk. Everything in Parts II and III applies. Read Part IV so you know your options before you need them.

10+ — Higher risk. Read Part IV carefully. In-office treatment is a reasonable plan, not a last resort. Read Chapter 3 first regardless — rate of loss is still your cheapest lever.

APPENDIX D

The Daily Routine Card

MORNING

Rinse or gentle cleanser.

Vitamin C serum (10–20% L-ascorbic acid)

Moisturizer

Broad-spectrum SPF 30+ — face, neck, décolletage, backs of hands

EVENING

Gentle cleanser

Retinoid — start twice weekly, build up slowly.

Biostimulator

(PLLA/CaHA)

Volume, gradual 3–6 months 2–3 years No Series of 2–3

sessions

PRP / PRF Skin quality only 2–3 months Months No Varies

RF microneedling Mild-moderate laxity 3–6 months ~1 year+
No \$800–1,200/session

Focused ultrasound Mild-moderate laxity 3–6 months ~1
year+ No Varies

LED (home) Skin quality, modest 12 weeks Ongoing use n/a
\$200–500 device

Moisturizer

Build order: sunscreen → moisturizer → retinoid → vitamin C.
Adding everything at once means you won't know what caused
the reaction.

If you shave: shave in the morning, retinoid at night.
Nothing active immediately after shaving. When skin is
irritated, drop shaving frequency before you drop the retinoid.

Not negotiable: the sunscreen. It has the strongest evidence
of anything in this book.

APPENDIX E

Consultation Question List

About them

What's your license and training, and how many of these treatments do you perform monthly?

Who is the supervising physician here, and are they on site?

Which board certified you, and is it recognized by ABMS?

About safety — ask all three

4. Do you keep hyaluronidase on site?

5. Do you have a written vascular occlusion emergency protocol, and is staff trained on it?

6. Cannula or needle in the midface and temples — and why?

About me

7. Is my main problem volume, laxity, or both?

8. What would you do first, and what would you deliberately not do yet?

9. Can I see before-and-afters of patients with my pattern of loss, my age, and my skin tone?

About money

10. What does this cost this year, including maintenance?

11. What happens if I don't like it — correction policy, and who pays?

About timing

12. Should I wait for my weight to stabilize or start now, and why do you take that position?

Red flags: pressure to decide today · expiring discounts · no medical history taken · vague answers about supervision · no hyaluronidase on site · before-and-afters all one demographic · an esthetician offering injectables · package deals on medical procedures · a plan much larger than what you came in for.

The rule that protects you most: don't decide in the room. A good provider will still be there next week. Glossary

Biostimulator — an injectable that triggers your own collagen production rather than filling space directly. Poly-L-lactic acid (PLLA) and calcium hydroxylapatite (CaHA) are the main types.

Cannula — a blunt-tipped instrument used instead of a sharp needle for some injections. Appears to reduce the risk of accidentally entering a blood vessel.

Collagen — the structural protein that gives skin its strength and framework.

Compartments (facial fat) — the discrete, separated pockets of fat in the face, arranged in superficial and deep layers. They empty independently and unevenly.

Elastin — the protein responsible for skin's ability to snap back after being stretched.

FDA-approved vs. FDA-cleared — approval requires evidence that a product is safe and effective. Clearance establishes only that a device is substantially equivalent to something already on the market. Most consumer beauty devices are cleared, not approved.

GAIS (Global Aesthetic Improvement Scale) — a rating scale where an evaluator or patient grades whether a face looks improved. A judgment, not a measurement.

Good-faith examination — the history and assessment legally required before a prescription drug (including injectables) is administered.

Hyaluronic acid (HA) — a substance your body produces naturally. As an injectable filler, it occupies space under the skin. In a topical serum, it holds water at the surface. These are not the same intervention.

Hyaluronidase — the enzyme that dissolves HA filler. This is why HA is reversible and why a practice should have it on site. Lean mass — muscle and other non-fat body tissue.

Photoaging — skin damage caused by cumulative sun exposure, as distinct from intrinsic aging.

PLLA — poly-L-lactic acid, a biostimulator (brand name Sculptra).

PRP / PRF — platelet-rich plasma / platelet-rich fibrin. Your own blood, concentrated and reinjected. Skin quality, not volume.

Retaining ligaments — fibrous bands anchoring facial soft tissue to bone. Why deflation reads as sagging. RFMN — radiofrequency microneedling.

Slow-transit constipation — constipation where the colon moves material too slowly to trigger the urge to go. The pattern most associated with these medications.

Titration — the scheduled step-up in medication dose over weeks.

Vascular occlusion — filler blocking a blood vessel. Rare and the most serious complication of injectables.

REFERENCES

1. Organized by chapter. Every clinical claim in this book traces to one of these.

Chapter 1

1. For the reference section. Verify before publication.
2. FDA drug shortage resolutions: tirzepatide (December 2024), semaglutide (February 21, 2025); 503A grace period ended April 22, 2025; 503B May 22, 2025.
3. FDA proposed rule, April 30, 2026 — excluding semaglutide, tirzepatide, and liraglutide from the 503B Bulks List. Public comment period closed June 29, 2026. Check status before publication; this may have been finalized.
4. FDA adverse event reports as of February 28, 2025: 455+ for compounded semaglutide, 320+ for compounded
5. tirzepatide, including hospitalizations from dosing errors.

Chapter 2

1. For the reference section. Verify each before publication.
2. Sharma RK, Vittetoe KL, Barna AJ, Takkouche S, Varelas AN, Yang SF, Stephan SJ, Patel PN. “Radiographic Midfacial Volume Changes in Patients on GLP-1 Agonists.” *Otolaryngology–Head and Neck Surgery*. 2025;173(2):360–366. doi:10.1002/ohn.1209. PMID 40407186.
3. Daneshgaran G, Shaully O, Gould DJ. “‘Ozempic Face’ in Plastic Surgery: A Systematic Review of the Literature on GLP-1 Receptor Agonist-Mediated Weight Loss and Analysis of Public Perceptions.” *Aesthetic Surgery Journal Open Forum*. 2025;7:ojaf056. doi:10.1093/asjof/ojaf056.
4. Sharp — published response to Daneshgaran et al. *Aesthetic Surgery Journal Open Forum*. doi:10.1093/asjof/ojag080. (The counterargument on framing.)

5. Rohrich RJ, Pessa JE. “The Fat Compartments of the Face: Anatomy and Clinical Consequences for Cosmetic Surgery.” *Plastic and Reconstructive Surgery*. 2007;119(7):2219–2227.
6. Rohrich RJ, Pessa JE. “The Retaining System of the Face: Histologic Evaluation of the Septal Boundaries of the Subcutaneous Fat Compartments.” *Plastic and Reconstructive Surgery*. 2008;121(5):1804–1809.
7. Hany M, Zidan A, Ghozlan NA, et al. “Comparison of Histological Skin Changes After Massive Weight Loss in Post- bariatric and Non-bariatric Patients.” *Obesity Surgery*. 2024;34(3):855–865.
8. Paschou IA, Sali E, Paschou SA, et al. “GLP-1RA and the possible skin aging.” *Endocrine*. 2025;89(3):680–685. (Cited only as an open hypothesis.)
9. Cotofana S, Gotkin RH, Frank K, et al. “The Functional Anatomy of the Deep Facial Fat Compartments.” *Plastic and Reconstructive Surgery*. 2019;143(1):53–63.
10. Illustration brief
11. Figure 2.1 — The four layers. Lateral cross-section of the cheek: bone, ligament, deep fat, superficial fat, skin. Clean and labeled.
12. Figure 2.2 — The compartments. Frontal view, superficial compartments on the left half of the face and deep on the right, color-differentiated and labeled with the names listed above.
13. Figure 2.3 — Before and after deflation. Same face, two states. Not an aging comparison — a volume comparison. This illustration carries the chapter’s central idea, and it’s worth paying for.

Chapter 3

1. For the reference section. Verify each before publication.

2. Lean mass, pooled: Systematic review and network meta-analysis of GLP-1RAs and co-agonists on body composition, 22 RCTs, 2,258 participants. Lean mass loss $\approx 25\%$ of total weight lost; tirzepatide 15 mg and semaglutide 2.4 mg maximized fat loss but were among the least effective at preserving lean mass—metabolism (ScienceDirect 3. S002604952400341X).
4. Registration trial figures: Neeland IJ et al. “Changes in lean body mass with glucagon-like peptide-1-based therapies and amelioration strategies.” Diabetes, Obesity and Metabolism. 2024. STEP-1: lean mass -6.92 kg on -15.3 kg total, $\approx 45\%$ of weight lost. SURMOUNT-1: $\approx 25.7\%$. Semaglutide is associated with lean mass loss up to 40% of total weight lost.
5. Circulation primer: “Muscle Mass and Glucagon-Like Peptide-1 Receptor Agonists: Adaptive or Maladaptive Response to Weight Loss?” Circulation. Reports STEP-1 at 45.5% and SURMOUNT-1 at 34.3% by its calculation.
6. The hopeful case series: “Preservation of lean soft tissue during weight loss induced by GLP-1 and GLP-1/GIP receptor agonists: A case series.” PMC12536186. Three patients, resistance training 3–5 days/week, protein 1.6 – 2.3 g/kg fat-free mass. Lean soft tissue changes: -6.9% , $+2.5\%$, $+5.8\%$.
7. SEMALEAN: 115 enrolled, 106 completed, semaglutide 2.4 mg. Lean mass declined then stabilized; handgrip $+4.5$ kg at 12 months; sarcopenic obesity $49\% \rightarrow 33\%$. PMC12673431.
8. Titration schedules: semaglutide $0.25 \rightarrow 0.5 \rightarrow 1.0 \rightarrow 1.7 \rightarrow 2.4$ mg at 4-week intervals, ~ 16 weeks to maintenance; 1.7 mg approved as an alternative maintenance dose. Tirzepatide $2.5 \rightarrow 5 \rightarrow 7.5 \rightarrow 10 \rightarrow 12.5 \rightarrow 15$ mg, ~ 20 weeks; 5 mg and 10 mg as tolerated maintenance doses. Trial guidelines and package inserts.
9. Real-world escalation: 52.9% of semaglutide users reached 2.4 mg vs 77.6% of tirzepatide users reached 15 mg. Pharmacy (MDPI 2673-4168/5/4/90), 739 medication courses.

10. Re-titration case report: “Unmasking Semaglutide-Induced Gastroparesis: The Dangers of Rapid Dose Escalation in a Diabetic Patient.” PMC12497442. 48-year-old restarted at 2 mg without re-titration; gastroparesis and acute kidney injury from dehydration.
11. Dose-response: SURMOUNT-1, 72 weeks — mean weight change -15.0% (5 mg), -19.5% (10 mg), -20.9% (15 mg), vs -3.1% placebo. (An alternative estimand in the same trial reports 16.0%, 21.4%, 22.5%.) Confirm which figures you use and be consistent.
12. Dose-response meta-analysis: 7 RCTs, 4,795 participants. Placebo-adjusted weight change -8.07% (5 mg), -10.79% (10 mg), -11.83% (15 mg). PMC11445313.
13. Dose-dependent GI effects: Lilly trial protocol documentation states most tirzepatide adverse events were dose- dependent and GI-related — nausea, vomiting, diarrhea — and that slower escalation with smaller increments improves tolerability.

Chapter 4

1. For the reference section. Verify each before publication.
2. Protein targets: “Medical nutrition in the glucagon-like peptide-1 (GLP-1) era: Protein strategies, micronutrient monitoring, and lean mass preservation.” Clinical Nutrition ESPEN. 2026 Apr 24;73:103305. PMID 42036071. Proposes ≥ 1.2 g/kg (up to 1.6 g/kg in adults without CKD), meal-wise ~ 0.3 – 0.4 g/kg, ~ 2.5 – 3 g leucine; lab panel of vitamin D, B12, iron studies, folate, zinc, thiamine.
3. Case series protein intakes: PMC12536186. 1.6–2.3 g/kg fat-free mass.
4. Optimizing GLP-1 therapies: PMC12661421. Protein >1.2 g/kg/day evenly distributed, plus resistance training; GI side- effect management.
5. Collagen — the funding analysis: Myung and Park. “Effects of Collagen Supplements on Skin Aging: A Systematic Review and Meta-Analysis of Randomized Controlled Trials.” American Journal of Medicine. 2025. 23 RCTs, 1,474 participants. Industry-funded trials positive; non-industry-funded null; high-quality studies null.

6. Collagen — the more favorable read: “Oral Collagen Peptides and Skin Rejuvenation: A Systematic Review and an Updated Meta-Analysis of RCTs.” PMC13370842. Search through November 2025. Hydration and barrier function most reliable; elasticity at 12 weeks; explicitly states data insufficient for wrinkle or dermal density claims. Constipation management: “Managing Constipation in Patients on GLP-1s,” Medscape, February 2026 — laxative categories, soluble vs. insoluble fiber, hydration warning with insoluble fiber.
7. Incretin-induced constipation: risk factors include baseline constipation, diabetic autonomic neuropathy, GI motility disorders, and rapid dose escalation; two-week threshold for escalating to osmotic or stimulant laxatives; red flags require urgent investigation.
8. Prevalence: SURMOUNT-1 ~6–7% for tirzepatide, STEP-1 ~5% for semaglutide; real-world estimates 11–24%. Gastric emptying slowed ~20–30%.
9. Obstruction risk: observational findings show a higher relative risk of bowel obstruction with GLP-1 RAs used for weight loss than with some other anti-obesity medications; absolute risk is low.
10. Fiber target: ~25–38 g/day total from food plus supplements.

Chapter 5

1. For the reference section. Verify each before publication.
2. Facial exercise pilot: Alam M, Walter AJ, Geisler A, Roongpisuthipong W, Sikorski G, Tung R, Poon E. “Association of Facial Exercise With the Appearance of Aging.” JAMA Dermatology. 2018 Mar 1;154(3):365–367.
3. doi:10.1001/jamadermatol.2017.5142. PMID 29299598. 27 enrolled, 16 completed; 30 min daily weeks 1–8, alternate days weeks 9–20; blinded raters; significant improvement in upper and lower cheek fullness; mean rated age 50.8 → 49.6 → 48.1. Note the disclosure: co-author Gary Sikorski founded Happy Face Yoga, the regimen studied.

4. Face yoga follow-up: “Effect of Intensive Face Yoga on Facial Muscles Tonus, Stiffness, and Elasticity in Middle-Aged Women: A Pre-Experimental Clinical Trial.” PMC12112979. NCT06765408. Also uncontrolled.
5. Single vs. multiple sets, early phase: NSCA guidance of 1–3 sets, 8–15 reps, 2–3×/week for multi-joint exercises at 50– 85% 1RM; several studies show comparable strength gains from single vs. multiple sets in the first 6–12 weeks. PMC12675467.
6. ACSM recommendation: older adults, resistance training $\geq 2\times$ /week at 60–80% 1RM for 8–12 weeks to significantly improve strength and lean body mass.
7. Two vs. three sessions: retrospective analysis in adults ≥ 60 found two sessions per week comparably effective to three for body composition maintenance. PMC8197305.
8. Volume and lean mass sparing under caloric restriction: programs with ≥ 10 weekly sets per muscle group showed little to no lean mass loss. PMID 35146569.
9. Protein plus training RCT: 100 adults aged 55–80, 10-week hypocaloric program, 2×2 design — high protein (1.3 g/kg) vs. normal (0.8 g/kg), with or without resistance exercise 3×/week. PMC5294725.
10. Resistance training meta-analysis: Lopez et al. “Resistance training effectiveness on body composition and body weight outcomes in individuals with overweight and obesity across the lifespan.” Obesity Reviews. 2022. 114 studies. Sarcopenic obesity and grip strength: SEMALEAN, PMC12673431 (also cited in Chapter 3).

Chapter 6

1. For the reference section. Verify each before publication.
2. Sunscreen RCT: Hughes MCB, Williams GM, Baker P, Green AC.
“Sunscreen and Prevention of Skin Aging: A

3. Randomized Trial.” *Annals of Internal Medicine*. 2013 Jun 4;158(11):781–790. PMID 23732711. 903 adults under 55, Nambour, Australia, 4.5 years. Daily sunscreen group showed no detectable increase in skin aging; 24% less skin aging than discretionary use (relative odds 0.76, 95% CI 0.59–0.98)—no overall effect of β -carotene.
4. Cosmeceutical grading: Systematic review of 32 studies, 1,236 patients. Vitamin C and retinol Grade A; bakuchiol and growth factors Grade C for limited evidence. *Archives of Dermatological Research*, doi: 10.1007/s00403-024-02908-2. Retinoin mechanism and status: “Retinoin for Photodamaged Facial Skin: Systematic Review and Meta-Analysis of Randomized Controlled Trials.” PMC12615114. Retinoin upregulates type I procollagen and inhibits AP-1-driven MMP activity.
5. Retinoin review: “An Updated Review of Topical Retinoin in Dermatology.” PMC12653878. Studies January 2000–July 2025; robust RCT and systematic review support in acne and photoaging.
6. Retinoid alternatives: “Comparing Retinoin to Other Topical Therapies in the Treatment of Skin Photoaging: A Systematic Review.” *American Journal of Clinical Dermatology*. 2024. Retinoin remains the gold standard; retinaldehyde and other precursors are reasonable second-line options for patients intolerant of tretinoin.
7. Niacinamide: “Mechanistic Basis and Clinical Evidence for the Applications of Nicotinamide to Control Skin Aging and Pigmentation.” PMC8389214. Effective at 2–10%; no convincing evidence of a specific molecular target for skin aging. Bakuchiol: “Multidirectional activity of bakuchiol against cellular mechanisms of facial aging.” PMC9328396. Cosmeceutical overview: “Cosmeceuticals for Anti-Aging: Mechanisms, Clinical Evidence, and Regulatory Insights.” *Cosmetics* 2025;12(5):209. Notes the need for larger, long-term, independently conducted RCTs.

Chapter 7

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2. LED home use and dosimetry: “Social Media Mythbusters: At-Home Red Light and LED Therapy Devices.” *Dermatology Times*, 2026. Home-use photoaging trials show statistically significant but modest wrinkle and texture improvement over 12 weeks, contingent on consistent daily exposure and adequate output; consumer mask irradiance frequently undisclosed or 20–40 mW/cm² vs 100+ mW/cm² in clinical systems; overuse may blunt benefit.
3. PBM clinical indications: 2025 JAAD consensus review endorsing photobiomodulation for androgenic alopecia, wound and decubitus ulcers, peripheral neuropathy, and acute radiation dermatitis — clinical applications, not consumer devices.
4. At-home microneedling risks: dermatologist commentary on dragging trauma from rollers vs. vertical puncture from professional pens; inability to sterilize without an autoclave; documented risks of infection (folliculitis through cellulitis), scarring, and post-inflammatory hyperpigmentation, elevated in medium-to-deep skin tones. Needle lengths ≥ 1.0 mm intended for clinical use.
5. Microcurrent: narrative review literature, PMC12357078 and related; evidence base is predominantly small and nonexperimental.
6. FDA clearance vs. approval: 510(k) clearance establishes substantial similarity to a predicate device and does not require demonstration of efficacy; premarket approval requires evidence of safety and effectiveness.
7. Clinical RF evidence: see Chapter 9, where it’s sourced directly. Deliberately not cited here — the at-home RF literature I could reach was manufacturer-published and unverifiable.

Chapter 8

1. For the reference section. Several items need primary verification — flagged below.

2. International consensus (the January 2026 document): Nikolis A, Somenek MT, Dayan S, Cartier H, Fabi SG, Avelar L, Franco J, Frank K, Haddad A, Alsufyani MA, Huang J, Prygova I, Safran T. “Managing Aesthetic Needs in Prescription Medication-Driven Rapid Weight Loss Patients: Results of an International Consensus. The Clinician Perspective.” *Journal of Cosmetic Dermatology*. 2026 Jan;25(1):e70644. doi:10.1111/jocd.70644. PMID 41560373. PMCID
3. PMC12820441. Verified. Clinician opinion survey and expert panel agreement — not a controlled trial. Co-author Inna Prygova is affiliated with Galderma.
4. ⚠ A correction to this paper was published: *J Cosmet Dermatol*. 2026 Mar 8;25(3):e70781. doi:10.1111/jocd.70781. PMID 41796982. Read the correction before citing the source — I could not retrieve its content.
5. The earlier Delphi study (related, separate paper): Nikolis A, Enright KM, Fabi SG, et al. “Consensus Statements on Managing Aesthetic Needs in Prescription Medication-Driven Weight Loss Patients: An International, Multidisciplinary Delphi Study.” *Journal of Cosmetic Dermatology*. 2025 Mar 26;24(4):e70094. doi:10.1111/jocd.70094. PMID 40135477. PMCID PMC11938202. Commissioned by Galderma — stated in Galderma’s own announcement.
6. The GLP-1 midface trial: Lorenc ZP, Somenek M, et al. “A Multicenter, Open-Label Study of Combined Poly-L-Lactic Acid and Hyaluronic Midface Filler Regimen Enhances Facial Harmony and Skin Quality in GLP-1 Medication Users.” *Aesthetic Surgery Journal*. 2026;46(5):509. doi:10.1093/asj/sjaf240. PMID 41243519. PMCID PMC13064655. Verified. n=41 (39 female, 2 male), open-label, no control group. Products: Sculptra (PLLA-SCA), Restylane Lyft, Restylane Contour — all Galderma. 2–3 PLLA sessions plus 1–2 HA sessions, followed for 9 months.
7. ⚠ The “331 patients” figure in earlier drafts was wrong — that number comes from broader non-GLP-1 midface trials and was incorrectly attributed to this cohort. Corrected.
8. Galderma post-marketing analysis: 85.7% of patients were less gaunt or sunken at 9 months. Manufacturer-

9. sponsored; attributed as such in the text.
10. Lorenc PLLA methodology papers — use for injection technique and anatomical placement (depth, periosteal vs. subcutaneous, cannula vs. needle), not for standalone complication rates: “The history behind the use of injectable poly-L-lactic acid for facial and nonfacial volumization.” *J Drugs Dermatol*. PMID 24719075. And “Understanding, avoiding, and treating potential adverse events associated with the use of poly-L-lactic acid.” *J Drugs Dermatol*. PMID 24719076.
11. Vision-threatening complications: “Vision-Threatening Complications of Soft Tissue Fillers: A Report by the American Academy of Ophthalmology.” 2025. 226 injection sites — nose 40%, forehead 25%, glabella 12%, temple 9%; central and upper midface 84% of cases. Of 196 cases with recorded outcomes: vision unchanged 70%, improved 28%, worsened 2%; interventions were safe but usually not effective.
13. Vascular occlusion incidence: reported ranges 0.001%–0.05% of injection procedures; severe complications estimated at ~0.0001% after HA treatment. Cannula use appears to reduce risk significantly. PMC8884183 and related. Delayed nodules: incidence 0.02%–4.0%, onset months to years post-injection; MAUDE database analysis found 33.3% of reported complications were delayed onset, of which 71.8% were nodules. PMC10999391.
14. Hyaluronidase in aesthetic medicine: “Hyaluronidase Use in Aesthetic Medicine: Formulations, Safety, and Clinical Practice.” PMC12787120, 2025.
15. Market context: Allergan Aesthetics 2026 data — 61% of GLP-1 patients experience midfacial volume loss, 50% experience skin laxity. McKinsey 2025 — 63% of GLP-1 patients seeking facial treatment had never been cosmetic patients before. Both are industry-sourced; label as such if used.

Chapter 9

1. All figures verified at primary sources.

2. HIFU systematic review: Haykal D, Sattler S, Verner I, Madhumita M, Cartier H. “A Systematic Review of High-Intensity Focused Ultrasound in Skin Tightening and Body Contouring.” *Aesthetic Surgery Journal*. 2025 Jun 16;45(7):690–698. doi:10.1093/asj/sjaf053. PMID 40184185. 45 clinical trials and cohort studies, January 2010–October 2024. Skin laxity improvement: 18–30%, strongest in the lower face, neck, and periorbital regions. Under 5% reported transient erythema, swelling, or mild discomfort. The authors note that protocol standardization is still a key challenge.
3. RF microneedling systematic review: Kumar et al. “Radiofrequency Microneedling for Facial Rejuvenation: A Systematic Review.” *Journal of Cosmetic Dermatology*. 2026. doi:10.1111/jocd.70845. 20 studies, sample sizes 9–133 (mean ~32), 531 female and 27 male participants, mean age 49.8. Most protocols used 1–3 sessions at 3–4 week intervals, with depths of 0.5–3.5 mm. Tightening was most prominent in the lower face, jawline, and neck. The 37% figure: “Intramuscular Insertion of a Radiofrequency Microneedling Device for Facial Rejuvenation: A New Technique and Case Reports.” PMC7780448. Intradermal treatment of 15 patients produced a 37% mean laxity
4. improvement after facelift, as graded by 5 blinded evaluators. Also reports bipolar RFMN improving jawline and cheek elastometry in 44 patients; skin graded ~2.6 years younger.
5. Nonablative RF systematic review: “Radiofrequency-Based Treatments for Facial Rejuvenation: A Systematic Review of Efficacy, Safety, and Patient-Focused Outcomes.” PMC12715571. 15 studies. Patient-reported laxity improvement in 52.9% of 50 monopolar RF patients; blinded GAIS assessment showed firmness improvement in 100% of 40 patients at 12 weeks—confidence in the firmness finding graded low to moderate under GRADE-CERQual.
6. RFMN scope and limits: JMIR Dermatology scoping review, 2026, . RFMN is used
7. primarily for mild laxity and skin rejuvenation rather than as a substitute for a surgical facelift; satisfaction is highest among patients seeking subtle improvement.

8. derma.jmir.org/2026/1/e78385
9. RFMN safety series: “An Anatomical Approach to Radiofrequency-Assisted Facial Rejuvenation.” PMC11862810. 364 foreheads, 364 periorbital areas, 353 perioral areas, 233 jawlines treated; no hyperpigmentation, hypopigmentation, scarring, or prolonged erythema. Level of Evidence 4.
10. RFMN across indications: “Effectiveness of Radiofrequency Microneedling in the Treatment of Dermatological Conditions: A Systematic Review.” *Aesthetic Plastic Surgery*, 2026. doi:10.1007/s00266-026-05834-y. 41 studies, including 15 RCTs. PROSPERO CRD420251089393.

Chapter 10

1. For the reference section. Verify each before publication.
2. Med spa regulatory structure: most states have no med-spa-specific statute; injectables are regulated as the practice of medicine under state medical and nursing boards. Physician supervision—as medical director or via a
3. collaborative/supervisory agreement—is required in all 50 states where injectables or energy-based devices are used. However, the required level of presence varies. MedSpa Standards state compliance references, 2026.
4. NP practice tiers: American Association of Nurse Practitioners State Practice Environment map — full practice authority, reduced practice, restricted practice. Full-practice states as of 2026 include Arizona, Colorado, Oregon, Washington, Iowa, New Mexico, Maine, Montana, Nebraska, Nevada, North Dakota, New Hampshire, Rhode Island, South Dakota, Vermont, Wyoming, Alaska, and Hawaii. Check the current list at publication — this changes. California medical director restriction: under AB-890, qualified NPs may practice without a supervising physician relationship in designated settings. Still, they cannot serve as a med spa medical director, as that role constitutes the practice of med

icine.

5. Florida filler safety requirements: filler programs must maintain a written vascular occlusion emergency protocol, hyaluronidase on site for HA fillers, procedure-specific informed consent covering vascular occlusion risk, and staff training on complication recognition and response.
6. Good-faith examination: e.g., N.J.A.C. 13:35-7.1A requires history, examination, diagnosis, and documented therapeutic plan before dispensing or prescribing — applicable to injectable neuromodulators as prescription drugs.
7. Board certification: The Aesthetic Society and ASPS — the American Board of Plastic Surgery is the only ABMS- recognized board certifying in plastic surgery; the American Board of Cosmetic Surgery is not ABMS-recognized; “there is no ABMS-recognized certifying board with cosmetic surgery in its name.”
8. ABFPRS requirements: residency in otolaryngology–head and neck surgery or plastic surgery, plus fellowship, plus at least 200 facial cosmetic procedures as primary surgeon within three years.
9. Non-surgical limits: JMIR Dermatology scoping review, 2026 — RFMN used for mild laxity and skin rejuvenation rather than as a substitute for surgical facelift; satisfaction highest among patients seeking subtle improvement. (Also cited in Chapter 9.)

Chapter 11

1. For the reference section. Verify each before publication.
2. Discontinuation rates and regain overview: “Weight maintenance after discontinuation of GLP-1 therapies.” eClinicalMedicine, 2026. doi: S2589537026002403. Up to 65% of users discontinue within a year of initiation; RCTs show roughly two-thirds of lost weight regained within a year of discontinuation.

3. STEP-1 extension: Wilding JPH et al. “Weight regain and cardiometabolic effects after withdrawal of semaglutide: the STEP 1 trial extension.” *Diabetes, Obesity and Metabolism*. 2022;24(8):1553–1564. doi:10.1111/dom.14725.
4. STEP-4: Rubino D et al. *JAMA*. 2021;325(14):1414–1425. doi:10.1001/jama.2021.3224. After a 20-week run-in producing a 10.6% mean loss, the placebo group regained 6.9% of baseline weight; continued semaglutide led to a further 7.9% loss.
5. SURMOUNT-4: Aronne LJ et al. “Continued treatment with tirzepatide for maintenance of weight reduction in adults with obesity.” *JAMA*. 2024;331(1). 670 participants; the placebo group regained 14% of baseline weight, and the subsequent group lost an additional 5.5%.
6. SURMOUNT-4 post hoc: Horn DB, Linetzky B, Davies MJ et al. “Cardiometabolic Parameter Change by Weight Regain on Tirzepatide Withdrawal in Adults With Obesity.” *JAMA Internal Medicine*, published online November 24, 2025. doi:10.1001/jamainternmed.2025.6112. Most participants regained $\geq 25\%$ of weight within one year of withdrawal; greater regain was associated with greater reversal of cardiometabolic improvement.
7. Real-world contrast: “Weight trajectories after last tirzepatide or semaglutide prescription across a federated health network.” medRxiv, 2026. Among patients with no subsequent prescription for one year: regain in 39.3% (semaglutide) and 26.6% (tirzepatide); no regain in the majority. Preprint — check publication status before citing.