Photo-Compression Therapy™ (PCT)

A method description: sustained facial compression, surface CO_2 and red and near-infrared light in one professional facial step

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Disclosure: the author is co-founder of The Glow Years, which makes the MIBU™ professional system used in PCT.

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ABSTRACT

Photo-Compression Therapy™ (PCT) is a professional facial method developed by Danielle McDonald, a beauty therapist who owned a day spa for seven years, and taught by The Glow Years.

In one step of about 30 minutes, three things happen at the same time:

1. A clear compression mask sets on the face, neck and décolleté. Clients describe a gentle compression.
2. The mask releases carbon dioxide (CO_2) at the skin's surface as it activates.
3. The practitioner's own red or near-infrared LED shines through the clear mask while it sets.

Each element draws on its own body of research: photobiomodulation, the physiology of fluid movement and compression, and the Bohr effect.

This paper sets out what PCT is, the science it draws on, how the method is performed, who it suits, and where the research could go next. It's the reference version of the method, written for estheticians and other skin professionals, educators and researchers.

1. Why this method exists

I trained as a beauty therapist and owned a day spa for seven years. Two things from those years led to PCT.

The first was LED. So many skin professionals own a red or near-infrared LED, and so many sell it as an add-on at the end of a facial. It has a real research base, and it's often treated as an extra.

The second was the mask. Protein and starch masks set on the skin and create a gentle compression, and they were part of my own treatment room for years. I loved what I saw. After a treatment, skin looked fresher, more radiant and healthy-looking. At my day spa in Australia, we also used them inside longer skin programs, alongside treatments like micro-needling, and I was so happy with how clients' skin looked through them. Clients loved the feeling of that gentle compression, and the change they could feel in their skin right away. But the mask and the light were always used one after the other, never together.

PCT puts them together. A clear mask means the light doesn't have to wait. The mask sets, the light shines through it, and the client rests. PCT has no needles, no heat and no wounding. I think that's an intelligent way to work with skin. Advanced doesn't mean aggressive. It means intentional.

Why it's a skin longevity method

There's a bigger reason too. I started seeing skin longevity sold as an ingredient, and I think that undersells it.

Skin longevity is a whole field of science. Researchers now talk about "skinspan": how long skin stays healthy and working well, the way healthspan does for the body [1]. They're working on ways to measure how old skin is biologically, not just in years. They study telomeres, the caps on our chromosomes that shorten with age. They study senescent cells, which stop dividing but stay, and inflammaging, the low-level inflammation that builds as we age [1, 2]. Those are the questions at the frontier. Closer to the treatment room, they also study how skin works day to day: how fluid moves, how blood circulates, how cells make their energy.

No serum, supplement, device or facial can cover all of that on its own. Skin longevity isn't a product. It's how skin is cared for over time.

So I chose those three day-to-day areas and built the method with the aim of working with them in one step: pressure for fluid movement, CO_2 for circulation, light for cellular energy.

Light is the clearest example. Red and near-infrared light has decades of research on cellular energy behind it. I haven't seen a topical ingredient with that depth of research. If the LED is already in the room, using it while the mask sets is simply efficient.

I developed PCT in 2026. It was introduced to Australian skin professionals with the MIBU™ professional system in August 2026.

2. What PCT is

Definition

A treatment is Photo-Compression Therapy™ when all three of these happen at the same time, for the full setting time of the mask:

1. **Compression.** A clear compression mask is applied in one even layer over the face, neck and décolleté, and sets there. Clients describe the feeling as "a gentle compression".
2. **Surface CO_2.** The mask is activated by mixing a powder with an activating essence. The reaction releases CO_2 at the skin's surface, which shows as tiny bubbles. Clients don't feel the bubbles.
3. **Light.** Red or near-infrared LED is positioned over the mask while it sets. Because the mask is clear, nothing opaque sits between the light and the skin.

In short: **Compression + CO_2 + Light**.

The difference is timing. Light, a setting mask and hands-on work are each familiar in professional facials, but they're usually done one after another. In PCT, light and compression happen together, in one step.

As taught by The Glow Years

PCT is performed with the MIBU™ Lifting Mask Powder and a MIBU™ Activating Essence, chosen for how the skin looks that day. It's step 06 of the MIBU™ Lifting Facial (section 4). The LED is the practitioner's own, and its settings follow the LED manufacturer.

What PCT isn't

- It isn't a medical treatment. There are no injections, needles or wounding, and the method doesn't rely on heat.
- It isn't an alginate "modeling" or "rubber" mask. The MIBU™ mask is a protein and starch (albumen) compression mask.
- It doesn't add oxygen to the skin.
- It isn't a device. It works with the professional LED a practitioner already owns.

3. The science PCT draws on

This section describes research on light, pressure and CO_2 in general. These are not studies of PCT.

In training, practitioners learn the research behind PCT in three parts: pressure and tissue, CO_2 and the Bohr effect, and light and cellular energy.

3.1 *Compression, fascia and fluid*

Fascia. Under the skin, the face is held together by layers of connective tissue. The best known is the SMAS, the superficial musculoaponeurotic system, a fibrous layer that links the facial muscles to the skin [3]. Research on body fascia suggests its layers glide on a slippery, hyaluronan-rich layer, and that stiffness may come from that layer thickening [4]. This research is early, and most of it comes from the body, not the face.

Fluid. Fluid moves through these layers and is returned to the bloodstream by the lymphatic system. Unlike blood, lymph has no heart to pump it. Lymphatic vessels move it with their own gentle contractions and one-way valves, helped by movement and by pressure from the tissue around them [5].

Compression. In medicine, compression is well studied, mostly as stockings and bandages on the legs [6].

Gentle pressure and skilled hands have long been used in face and body care with the aim of supporting natural lymphatic flow.

3.2 *CO_2 and the Bohr effect*

In 1904, Christian Bohr and his colleagues described something the body does every day. Where carbon dioxide rises, hemoglobin lets go of the oxygen it carries more easily [7]. It's called the Bohr effect, and it helps deliver oxygen to the tissues that are working hardest.

In 2011, a research group applied pure CO_2 gas to human skin, using a hydrogel and a plastic adaptor sealed against the skin. They reported tissue changes they described as an "artificial Bohr effect" [8].

That system is very different from a cosmetic mask. In PCT, the CO_2 is part of how the mask activates. It doesn't add oxygen to the skin.

3.3 *Light and cellular energy*

Photobiomodulation is the name for the effects of red and near-infrared light on cells. The leading theory is that these wavelengths are absorbed by cytochrome c oxidase, an enzyme in the mitochondria (the part of the cell that makes energy). That absorption is thought to help cells make more ATP, the molecule cells use for energy. Other proposed pathways involve signaling molecules such as nitric oxide and reactive oxygen species [9, 10].

Wavelength sets depth. The longer the wavelength, the deeper light travels into tissue. Red light (about 630 to 660 nm) reaches further than blue. Near-infrared (about 830 to 850 nm) reaches further still, and it's invisible to the eye [9].

Dose is a hill, not a line. Studies describe a "biphasic" dose response: too little light may do nothing, and more isn't always better [11]. The dose depends on wavelength, the intensity at the skin (which falls as the light moves away) and the time.

Clinical research. Controlled trials have reported improvements in how fine lines and skin texture look after courses of red and near-infrared light [12, 13]. A systematic review of randomized controlled trials of LED in dermatology found a growing body of evidence, mostly from small trials, and called for larger studies with standardized settings [14]. Red and near-infrared light has also been studied for skin recovery after procedures [9].

What this means for PCT: the light comes from the practitioner's own professional LED, used at its manufacturer's settings. PCT doesn't change what the light is. It changes when it's used: during the mask, not after it.

3.4 *How the three fit together*

Making ATP uses oxygen. It's the last step in the chain the cell uses to make energy [10]. That's why the method pairs CO_2 with light in one step.

PCT is a method built on three established areas of science, and on what practitioners see in the treatment room.

4. The method in the treatment room

The method is taught in full in the *Photo-Compression Therapy™ Practitioner Education Manual* (The Glow Years, Edition 1, 2026, professional use only) and its practical training. This section is the summary.

4.1 *Where PCT sits*

PCT is step 06 of the MIBU™ Lifting Facial, which takes about 60 minutes, or about 65 with the optional peel.

Table 1. The steps of the MIBU™ Lifting Facial. Photo-Compression Therapy™ is step 06.

00 Consult Goals, history and suitability. Patch test where needed. Pick one priority.	3 min
01 Cleanse Gel cleanse and rinse well, so no oily film is left.	3 min
02 Hydrocleansing A technique created by Danielle McDonald. MIBU™ Deep Pore Enzyme Powder is mixed with a MIBU™ Activating Essence, chosen for that day's priority, then massaged over damp skin and rinsed.	5 min
03 Move A hands-on facial massage sequence, working with the fascia, with gentle, comfortable pressure. Hands only, no oil or balm.	8 to 10 min
04 Resurface (optional) A mandelic peel, only if the skin suits it. Removed with a cool water compress.	5 to 7 min
05 Customize Choose one Activating Essence for one priority.	1 min
06 Photo-Compression Therapy™ **The mask and the LED together.**	**About 30 min**

07 Remove and reset	5 to 10 min
Water and sponges dissolve the mask, then a warm towel. A hydrating sheet mask follows for about 5 minutes.	
08 Support	2 min
A MIBU™ Activating Essence, then Ceramide Milk, pressed over the face, neck and décolleté.	
09 Protect	2 min
Serum and moisturizer, plus SPF for daytime. Record the session.	

Choosing the essence (step 05). The practitioner matches the essence to how the skin looks that day. For example:

- Skin looks depleted or tired: PDRN
- Skin looks less firm: Copper Peptide
- Skin looks dehydrated or dull: Hyaluronic Acid

4.2 *Step 06, one action at a time*

1. **Check the skin is clean and dry.** The mask needs clean, dry skin to set. Nothing oily goes on before it, because lipids (oils, creams and ceramides) bind with the mask's proteins and starches and make it hard to remove.
2. **Mix fresh: 2 scoops of MIBU™ Lifting Mask Powder with 2 scoops of the chosen Activating Essence.** Mix just before applying, because the reaction starts as soon as they meet. It's ready when it flows from the spatula in a smooth ribbon.
3. **Apply in one even layer.** Take it up to the hairline, as close to the ears as possible and hooked just behind them, then down the neck and onto the décolleté. Take the mask just to the edge of the orbital bone, so it doesn't get into the eyes. Keep clear of the nostrils and mouth, and keep the edge clean around the brows. You'll see tiny bubbles as it activates.
4. **Place protective glasses over the client's eyes.**
5. **Position the LED over the mask** at the manufacturer's distance and settings, red or near-infrared. Keep the distance the same every session, so the dose stays the same.
6. **Let the client rest for about 30 minutes** while the mask sets. Tell her she'll feel a gentle compression. Check her comfort.
7. **Remove with water, never by peeling.** Water dissolves the mask. Release it with hands and water, then work over it with wet sponges until it softens and dissolves, then a warm towel. No cleanser or oil, for the same reason as step 1 above.
8. **Apply a hydrating, calming sheet mask for about 5 minutes.** It softens any tiny pieces left around the nose, the brows and the edges of the face, which are the trickiest spots. It also floods the skin with hydration, which skin tends to want after the mask.
9. **Lift the sheet mask off, wiping away the softened pieces as you go.** Then press and pat in what's left on the skin. Once it has absorbed, move on to Support (step 08 in Table 1).

4.3 *How often*

PCT is taught as a series, not a one-off.

On its own, PCT can be performed as often as weekly, because it has no downtime. The practitioner decides each session whether the optional peel belongs in it.

PCT can also sit inside a longer program with more advanced treatments, such as microneedling or laser, where the practitioner is qualified to offer them. Then the spacing depends on that treatment, and PCT waits until the skin is ready for it.

PCT also suits the recovery phase of a program. Once the skin is intact again, with no open or broken areas, it gives the client a treatment with no needles, no heat and no wounding while her skin settles.

LED settings and frequency always follow the LED manufacturer's guidance.

5. Who it suits, and when to wait

Suited to skin that looks less firm, puffy or less defined, dull, tired or dehydrated, and to clients who want a restful treatment with no needles or heat.

Check before every session. When in doubt, wait or refer the client to her doctor.

- Anything the LED manufacturer lists as a precaution or contraindication, including light sensitivity and medicines that make the skin more sensitive to light.
- **Egg allergy.** The mask contains albumen from egg. Don't use it on a client with a known egg allergy.
- **Fish allergy.** The PDRN Activating Essence contains PDRN from salmon. Don't choose it for a client with a known fish allergy.
- A known sensitivity or allergy to any other ingredient in the mask or essence. The mask also contains corn and tapioca starch, pearl-derived protein, hydrolyzed collagen and oat. Read the full ingredient list with the client, and patch test where needed.

- Broken, irritated or infected skin, or freshly treated skin that isn't intact yet (see 4.3).
- Clients who aren't comfortable with a setting mask on the face for 30 minutes.
- During the session: stop and remove the mask with water if the client feels burning, pain or panic.
- Very reactive or vascular-looking skin: skip the optional mandelic peel.
- PCT isn't a medical treatment. For a client with a diagnosed skin condition, check with her doctor before treating.

Straight after, the skin can look slightly pink or flushed, like the color after light exercise. That's expected and usually settles on its own. Record it. Strong redness, heat, burning, swelling or lasting discomfort isn't a normal response: refer her to her doctor.

6. What to look for, and what to record

How skin can look. Practitioners who teach PCT describe skin that looks smoother and more luminous right after a session.

What to record each session:

- The essence chosen, and whether the peel was used
- The LED device, wavelength, distance and time
- How the skin responded
- Before and after photos with the client's written permission, taken in the same light, from the same angle and distance, with the same relaxed expression

Records kept this way make one practitioner's sessions comparable over time. They're also a starting point for any future research (section 7).

7. Where the research could go next

PCT is new, and skin longevity is a young field. These are the questions I'd love a research partner to explore:

1. **Fascia and fluid.** What does a course of gentle, sustained pressure do to puffiness, contour and how freely the tissue glides?
2. **Cellular energy.** Does pairing CO_2 with light change anything, compared with light on its own?
3. **Senescent cells.** Does red and near-infrared light change markers of senescence in human skin? So far the studies are in cells and animals [15, 16].
4. **Inflammaging.** What does skin look like after years of regular, low-trauma care, compared with years without it?
5. **Skinspan.** Can regular treatment room care be measured in skin's biological age, not just how skin looks on the day?
6. **Rest.** Does 30 minutes of stillness change how the skin looks, or how clients feel?

Researchers and clinicians who'd like to work on PCT can contact The Glow Years.

8. Using the name

- Write it in full on first mention: **Photo-Compression Therapy**™, with a hyphen and capitals. In longer pieces, **PCT** can follow after the full name has been used.
- Practitioners who have bought the MIBU™ professional system and finished the full Photo-Compression Therapy™ course can receive a printed Photo-Compression Therapy™ Practitioner Certificate, and can name PCT on their treatment menus.
- Describe it by how skin looks ("skin looks smoother and more luminous"), never by what it does inside the skin.

Disclosure. The author is co-founder of The Glow Years (see the author note on the first page). This paper is education for skin professionals, not medical advice.

Trademarks. Photo-Compression Therapy™ and MIBU™ are trademarks used by The Glow Years.

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