

Palomar Lux 1540 Fractional Laser for Skin Resurfacing

What is it ?

- uses a handpiece that delivers light of 1540 nm. wavelength , through an array of small microbeams , which creates *deep* microscopic *columns* of *coagulated* tissue (heated up and thermally-damaged tissue) within the epidermis and dermis of the skin causing a change in the collagen and elastin below the skin surface , leaving spared skin in between the columns ; treatment of small zones of skin at a time is known as a *fractional* approach to treatment
- through this fractional approach *new* healthy tissue forms , through a healing response , to fill in the damaged / coagulated treatment zones
- with a series of treatments remodeling of the skin is allowed to take place , thereby achieving skin resurfacing through a fractional approach to skin rejuvenation

How does it work?

- deep columns of coagulated damaged tissue , up to 1mm. down into the skin , are created (surrounded by healthy tissue) while keeping the stratum corneum (skin's outer surface) undamaged
- the light absorbed by water in the skin tissue
 - > results in limited *thermal damage* to the tissue
 - > this brings on an *inflammatory response* deeper in the skin and a wound healing response
 - > release of inflammatory mediators into the dermis -> leads to *stimulation of fibroblasts* (the cells that produce collagen) in the dermis
 - > causes an increase in collagen production (resulting in *new collagen* to fill in the coagulated columns) and proliferation of keratinocytes
- skin's *wound healing* ability therefore allows for the remodeling to take place in the skin ; removal of coagulated cellular debris and damaged collagen and replacement with new collagen and tissue

What can it do for you ?

- treatment of *scars* of all types
- great for improvement of *acne scars* ! (the majority of patients will get a response)
 - best improvement in mild-to-moderate acne scars
 - thumbprint and ice pick scars respond well
 - treat the acne scars once the active / inflammatory component of acne has reasonably cleared
- improvement of *surgical scars*
 - flattening of raised / thick scars , plumping up of depressed scars, blending of pigment , decrease in stitch marks , textural improvement ; therefore improvement in texture and color of the scar
- improvement of *other scars* : trauma - related scars , burn scars, hypertrophic scars , hypopigmented or hyperpigmented scars
- improvement of *stretch marks* (occurs with stretching of the skin, represents a tear in the dermis)

- best response in *red*, fresh stretch marks (eg. post-partum) (vs. laxity in stretch mark -> responds best to a tightening laser device) ; can also get improvement in white or older stretch marks
- reduction of *wrinkles*
 - best for fine lines / mild-to-moderate wrinkles (not for severe / deep wrinkles)
 - > common areas :
 - around the eyes (crow's feet)
 - around the mouth
 - cheek
 - forehead
- improvement of *melasma*
- improvement of *skin texture* - superficial roughness , crepiness ; may achieve reduction of pore size

Key benefits / Advantages :

- provides a minimally invasive skin rejuvenation
- *a non - ablative* treatment (non - vaporizing)
 - leaving the skin barrier / surface (stratum corneum) in place but yet deep coagulating columns created
 - no open wound
 - this significantly decreases downtime and allows for quick recovery
- penetrates *deeply* (up to 1mm. down into the *dermis* of the skin)
 - need to go *deep* to create new skin in a scar / improve wrinkles ; better collagen stimulation with treating deeper levels of dermis
- higher energies allow one to go *deeper*
 - > therefore better results for scar / wrinkle treatment
- can use lower energies to not go as deep and do a more superficial treatment
 - > therefore used for melasma treatment
- great results ; significant improvement in acne scars ; there is no more effective treatment at present for acne scarring that involves little / no downtime as achieved with the Lux 1540
- is a great skin plumping laser due to *new collagen* produced in mid and upper dermis : rejuvenating the skin , providing a more youthful texture
 - only small microthermal zones of injury created ; only 10-15% of the skin surface is treated on average per treatment session
- fractional -> high safety margin
- well tolerated treatment - mild tolerated pain (built-in cooling system for patient comfort plus cool roller during treatment improves comfort)
- rapid healing
 - healing occurs from the viable untreated skin tissue in between the coagulated columns
 - no skin breakdown / open wound because the skin's outer surface (stratum corneum) remains undamaged , skin stays sealed , therefore no wound healing issues
 - no open wound , therefore no infections / bleeding / oozing
- little to no downtime (on average : 1-2 days only)
 - can shave or wash face immediately : can return to normal activity fairly quickly post-procedure
- improvement should last years

- less discomfort than with other systems using fractional technology
- safe for all skin types due to very low absorption by melanin
 - can treat darker skin types but need to be more careful to prevent post-inflammatory hyperpigmentation ; this is done by using lower energies , increasing cooling , decreasing number of passes , increasing interval between treatments , using a pre- and post-treatment skin lightening cream preparation

Treatment experience – What to expect :

- sit reclined on chair with laser handpiece pulsed over your skin by physician ; series of passes over skin area treated
- mild tolerated pain -> typically no topical anesthetic is required
- series of treatments required (as only on average 10-15% of skin typically treated per session)
- treatments usually spaced 3-4 weeks apart
- acne scars
 - majority need 4-6 treatment sessions (minimum of 4 sessions)
 - need at least 3-4 treatments to assess for improvement
 - will continue to see improvement 6-9 months after last treatment ; therefore full benefit seen at 6-9 months after end of treatment
- surgical scars
 - on average 3 treatment sessions
 - improvement can be seen *as early as 3-4 weeks* after first treatment ; some improvement should be seen by second treatment
- stretch marks
 - 3-6 treatment sessions ; variability in response – expect to see some improvement in color / texture ; anywhere from mild improvement to very significant improvement
- melasma
 - need to wait usually until 2nd - 3rd treatment to see improvement
- post -treatment
 - immediate : cool roller used on treated skin while still in office to cool epidermis
 - *avoid* covering up with make-up for the first 24 hrs
 - keep out of sun for the first 48 hrs. ; can use Sunforgettable mineral powder sunblock after treatment ; sunblock should be used regularly throughout treatment and beyond to maintain result
 - cool washcloths at home
 - hydrating spray - especially first 2 days
 - Pro Derm Regenerating cream containing aloe and providing moisturization following treatment
- variability in response
 - every individual is different and the result you achieve depends on your *individual biologic healing response* to the damage incurred to your skin by the 1540 laser
- re-treatments may be needed to maintain the result for wrinkle reduction as aging is a continuous process (depends on ongoing sunexposure after treatment , hereditary factors , life style factors such as smoking , suboptimal skin care)

Are there any side effects ?

- mild tolerable pain
- pinkness / mild redness (usually for 2 days ; sometimes up to 7 days but this is less usual, longer than 7 days is uncommon)
- mild swelling (immediate ; usually for 1-2 days only ; sometimes up to 3 days , more often around the eyes)
- light peeling / flaking (can occur in some patients 2-3 days post-treatment)
- may get some dryness post-treatment -> therefore use of moisturizer