



Vaymed

# SKYLINE

## VAYMED MEDICAL LASER

### HOW DOES IT WORK?



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# LASER FUNDAMENTALS

VAYMED deliver specific red and near-infrared wavelengths of laser light to induce a photochemical reaction and therapeutic effect. Laser therapy has been used in Europe since the 1970's and popular all over the world now.

## Physiological Effects of Laser Therapy

### Reduce Pain

Laser therapy can reduce the firing of the C-pain fibers that transmit signals of 'pain' from the cells to the brain. Increased blood circulation flushes away tissue irritants called 'kinins'. Pain modulating chemicals such as endorphins and enkephalins are released from the brain and adrenal gland. Increased cell membrane permeability encourages normal concentrations of ions across the cell membrane, and the resting potential of pain fibers is returned to -70 millivolts.

01

### Moderating Inflammation

Laser treatments modulate inflammation by causing vasodilation and activating the lymphatic drainage system. As a result, there is a reduction in swelling caused by bruising or inflammation. Try not to say that Laser treatments are "anti-inflammatory", they do not suppress inflammation as non-steroidal anti-inflammatory drugs (NSAIDs) do. Laser Therapy helps the body progress through the stages of inflammation more efficiently.

02



04

### Increased Circulation

Laser therapy enhances blood circulation, causes the release of more oxygen from the bloodstream, and enhances enzyme activity so the oxygen and nutrients are more efficiently converted into cellular energy. Damaged cells can repair and regenerate faster.

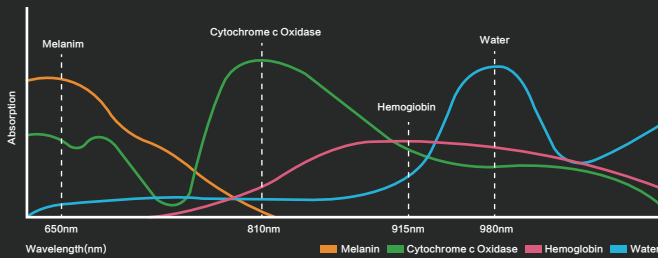
03

### Accelerate Wound Healing

Laser therapy stimulates fibroblast development (fibroblasts are the building blocks of collagen, which is predominant in wound healing) in damaged tissue. Collagen is the essential protein required to replace old tissue or to repair tissue injuries. As a result, laser therapy is effective on open wounds, scars, and burns.



# Why Are Wavelengths Important?



## 650nm Accelerates Surface Healing

Irradiating an area with 650nm, a wavelength where melanin in our skin absorbs very well, will ensure a large dose to the superficial region. Since light can both inhibit bacteria and promote cell growth, laser therapy has incredible results in wound healing and scar tissue regulation.

## 810nm Increases ATP Production

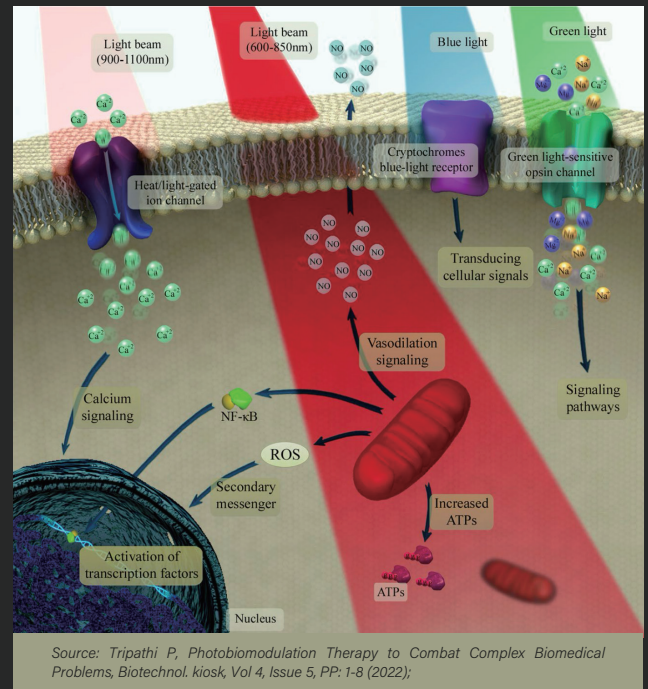
The enzyme determining how efficiently the cell converts molecular oxygen into ATP has the highest absorption at 810nm. Regardless of the enzyme's molecular state, when it absorbs a photon it will flip states. Photon absorption will accelerate the process and increase cellular ATP production.

## 915nm Enhances Oxygen Delivery

The quicker oxygen is released into the blood stream, the more fuel the cell has to carry out all of its natural healing processes. The peak of hemoglobin's absorption lies at 915nm, and when this radiation is absorbed, more of this oxygen-fuel is made available to the cells.

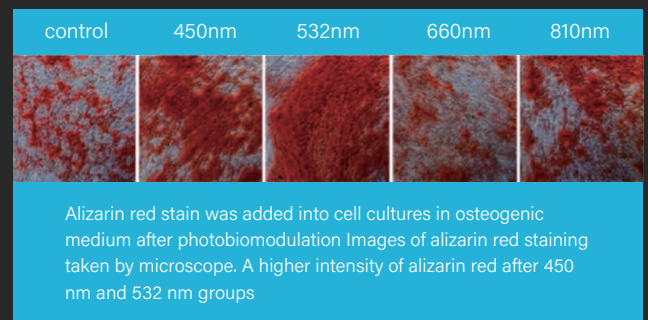
## 980nm Improves Circulation

Water in our pet's blood transports oxygen to the cells, carries waste away, and absorbs very well at 980nm. The energy created from absorbing a photon gets converted to heat, creating a temperature gradient at the cellular level, stimulating micro-circulation, and bringing more oxygen-fuel to the cells.



## 450nm and 532nm activate light-gated calcium ion channels

The 450 nm and 532 nm wavelengths were more effective in stimulating osteoblast differentiation compared to 660 nm and 810 nm. Intracellular calcium was higher after 450 nm and 532 nm. 450 nm and 532 nm photobiomodulation increase osteogenic relative gene expression through TRP/calcium signaling pathway.



### References

1. Wang Y, Huang Y Y, Wang Y, et al. Photobiomodulation (blue and green light) encourages osteoblastic-differentiation of human adipose-derived stem cells: role of intracellular calcium and light-gated ion channels[J]. Rep, 2016, 6:33719.
2. Hannah Serrage, Vladimir Heiskanen, William Palin, Paul R. Cooper, Michael R. Milward, Mohammed Hadis, Michael R. Hamblin, et al. Under the spotlight: mechanisms of photobiomodulation concentrating on blue and green light. Photochemical & photobiological sciences: Official journal of the European Photochemistry Association and the European Society for Photobiology, 18 (8), 1877-1909.

# Why is Power Important?

Power (Watts) is the rate of energy delivery and energy is measured in Joules (1 Watt = 1 Joule per second).

Higher power at the surface will deliver more energy to the desired depth.

Wavelengths determine a therapeutic laser's depth of penetration and power determines the dosage delivered to depth in tissues.



## The Importance Of Laser Pulsing

Studies prove that pulse frequencies elicit different physiological responses, and that different tissue types (muscle, connective tissue, bone, etc.) respond better to different pulse frequencies. VAYMED protocols use continuous wave and various pulse frequencies in combination with multiple therapeutic wavelengths to optimize clinical outcomes.

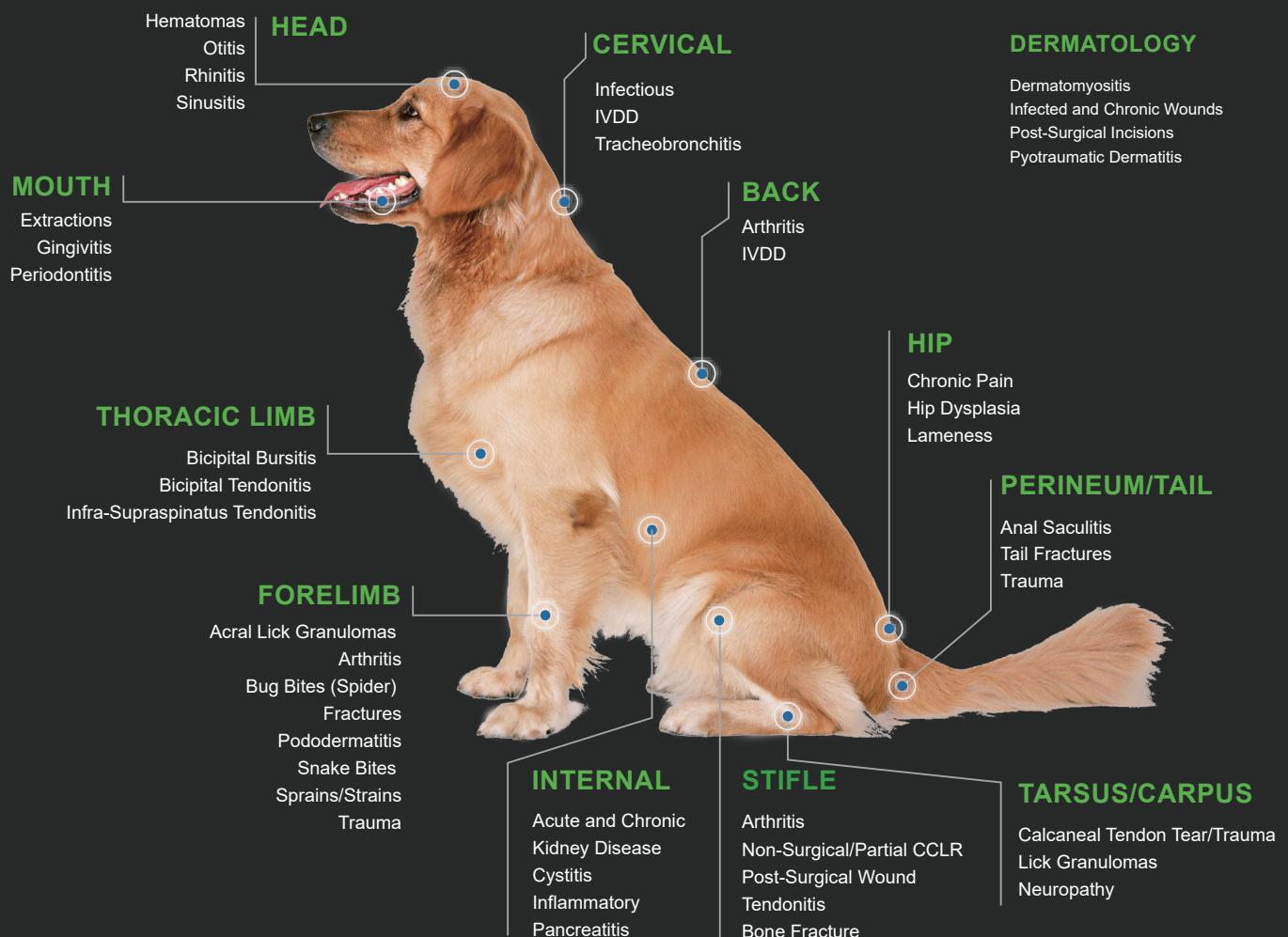
## How Does Intense Super Pulse (ISP) Enhance Laser Therapy?

Lasers operating in super pulse mode deliver bursts of high peak power for a short period of time. Our Intense Super Pulse (ISP) mode delivers a peak of up to 30w of laser energy to deeper tissues, mitigating superficial heat build-up.

# LASER THERAPY

## TREATMENTS & APPLICATIONS

For acute or chronic, superficial or deep conditions, laser therapy can help. By accelerating the healing process with increased circulation and enhanced tissue repair, laser therapy decreases inflammation and pain. In the management of chronic and acute pain, Class IV lasers created by VAYMED are a preferred choice for practitioners worldwide.



# SPECIFICATIONS



## MODEL : SKYLINE 6

|                       |                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wavelengths           | 6 Wavelengths<br>450nm   532nm   650nm   810nm   915nm   980nm                                                                                                                                                                                  |
| Power                 | CW.MAX.30 +/-3W                                                                                                                                                                                                                                 |
| Output Mode           | CW mode/Pulse mode/ISP mode                                                                                                                                                                                                                     |
| Handpiece Applicators | <ul style="list-style-type: none"><li>• 30 mm Open lens</li><li>• 30 mm Convex contact lens</li><li>• 7mm Curved lens</li></ul>                                                                                                                 |
| Battery               | <ul style="list-style-type: none"><li>• 7200mAh</li><li>• 12 hours (standby)</li><li>• Interchangeable battery</li></ul>                                                                                                                        |
| Technology Platform   | <ul style="list-style-type: none"><li>• USB software updates</li><li>• 8 inch HD touch screen</li><li>• Multi-core processor</li><li>• Multimedia tutorial videos</li><li>• 1460 protocols</li><li>• Easy carry design for equine vet</li></ul> |
| Weight                | 3kg                                                                                                                                                                                                                                             |
| Dimensions            | 300mm*220mm*110mm                                                                                                                                                                                                                               |
| Warranty              | 3-year manufacturer's warranty                                                                                                                                                                                                                  |



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