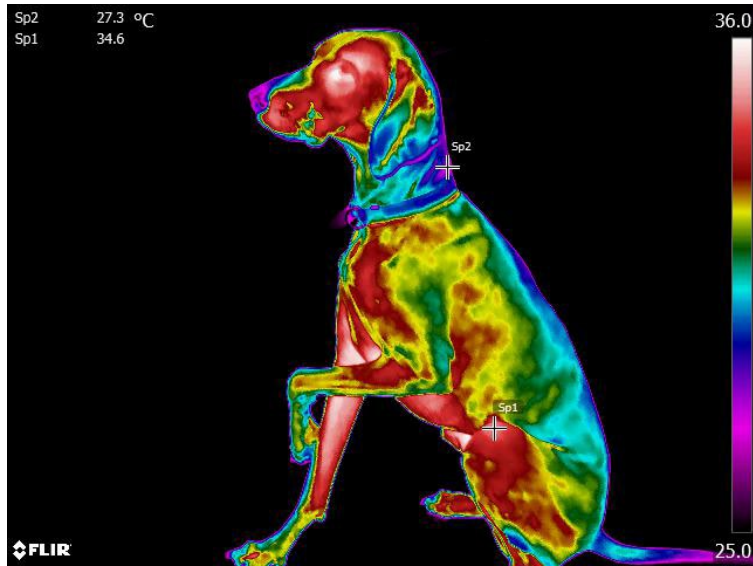


# What Is It?



Light energy is a form of radiant energy visible to the human eye. Infrared Radiation is a type of radiant energy that is invisible to human eyes but we feel as heat.

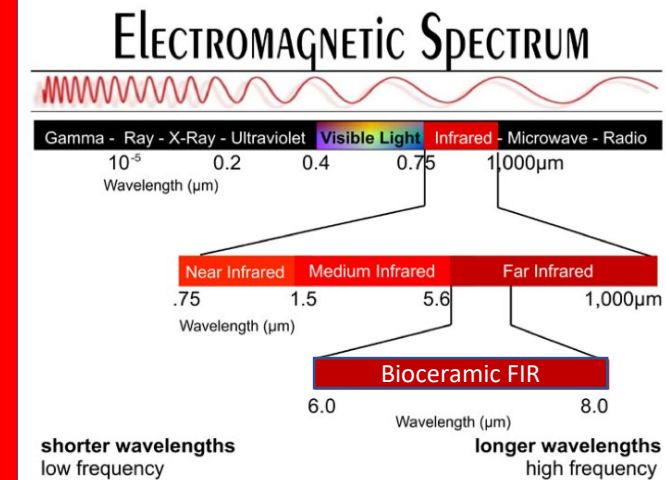
All objects - living or not - emit some level of IR radiation.

IR is a type of electromagnetic radiation, a continuum of frequencies produced when atoms absorb and then release energy.

Far Infrared Radiation (FIR) is a subdivision of IR.

*“In essence, all matter absorbs electromagnetic radiation to some degree and...emits back this absorbed energy” [1]*

All objects absorb and emit energy. It's the basic science behind IR thermometers and night vision goggles.

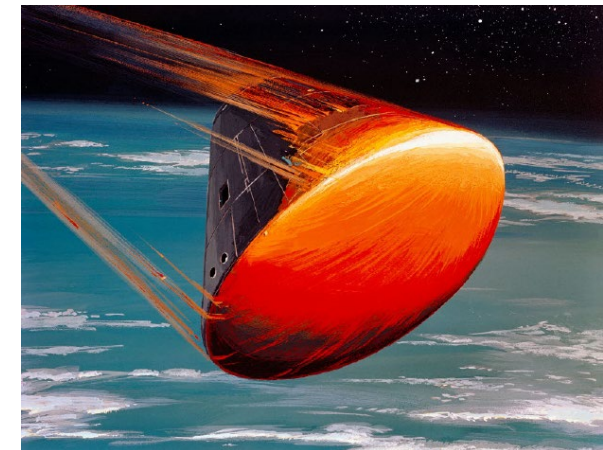


A ceramic is any of various hard, brittle, heat-resistant, and corrosion-resistant materials made by shaping and then firing a non-metallic mineral at a high temperature. The unique crystallinity and composition cause most ceramic materials to be good thermal and electrical insulators.

Ceramics present high reflection coefficient for Infrared Radiation.

*“The ceramic is therefore the functional component of the functional textile, and the amount and means by which the bio-ceramic can be incorporated into the fibres determines the overall fabric FIR emissivity” [2]*

Bio-ceramics is a generic term applied to ceramics with biological functionality, including those that can emit FIR.



# How We Use It

Ceramics are very good at insulating and reflecting heat.

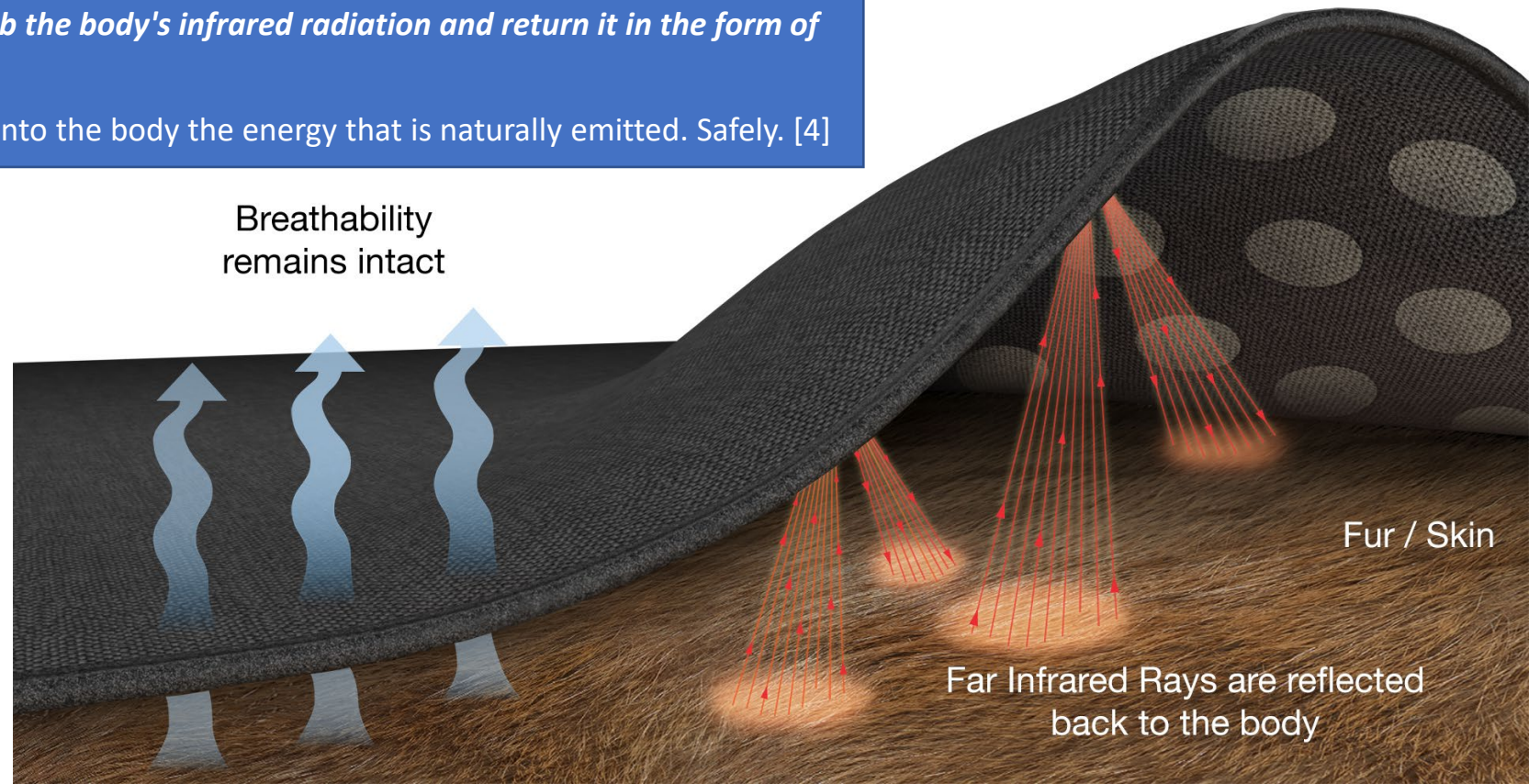
Bio-Ceramics are very good at reflecting FIR.

Bio-Ceramics in textiles are very good at reflecting FIR back into the body.

By applying a proprietary bio-ceramic finish to the inside of a garment, the body's own emitted FIR is captured and reflected back into the body.

*“Textiles with bioceramic materials are able to absorb the body's infrared radiation and return it in the form of long-lasting infrared radiation” [3]*

The bio-ceramic-coated material simply reflects back into the body the energy that is naturally emitted. Safely. [4]



# How It Works

Far Infrared Radiation is one of few safe wavelengths capable of penetrating deep into the body; FIR therapy works by emitting FIR rays deep (almost 2 inches) into muscle tissue.

*“FIR wavelength is too long to be perceived by the eyes, however, the body experiences its energy as a gentle radiant heat which can penetrate up to 1.5 inches (almost 4 cm) beneath the skin.”[1]*

By getting past skin-deep, FIR is effective at stimulating the cell membranes of blood and tissue. [5]

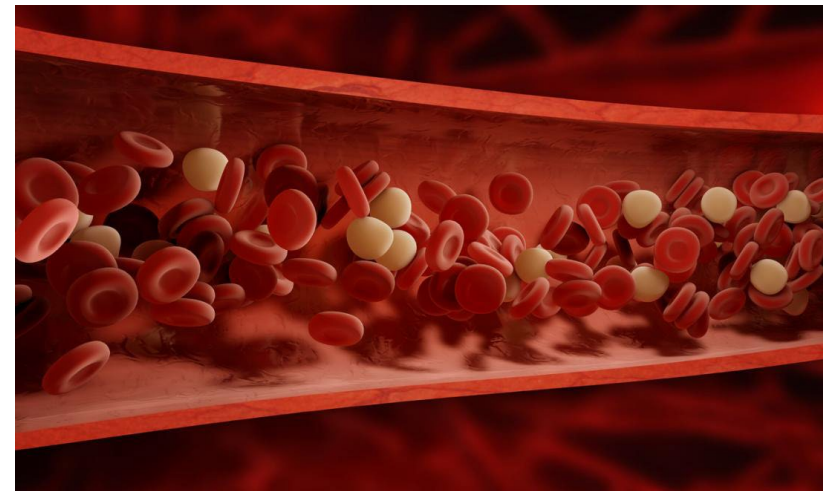
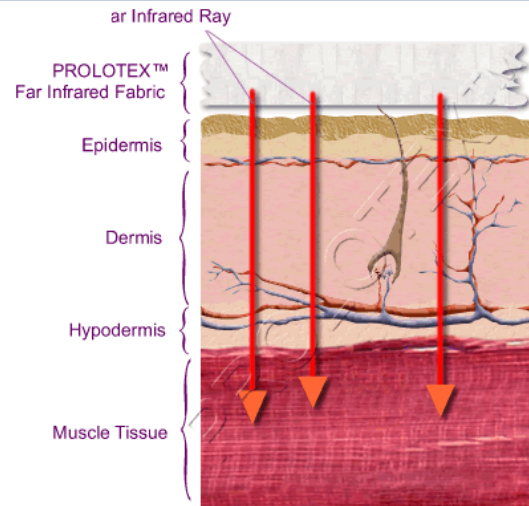
*“...triggered by an exposure to FIR, which eventually induce an increase in temperature of the body tissues or, more basically, an elevated motility of body fluids due to decrease in size of water clusters...” [6]*

Increased blood flow and circulation speeds nutrients throughout the system and hastens natural flushing of toxins and emissions.

*“Significant improvements to objective and subjective measures of blood flow...indicate that FIR therapy improves blood circulation” [7]*

Increased circulation means that the body’s own ability to self-regulate is promoted, hastening a return to equilibrium.

Non-invasively. Non-pharmacologically.





# Why It Works for Recovery



After a workout or excessive activity, muscles suffer a range of damage. This commonly referenced Exercise-induced Muscle Damage is the oft-cited mechanism for muscle growth. As muscle fibers get damaged and tear, the body rebuilds the fibers to be stronger.

These micro-tears are the leading cause for post-workout soreness.

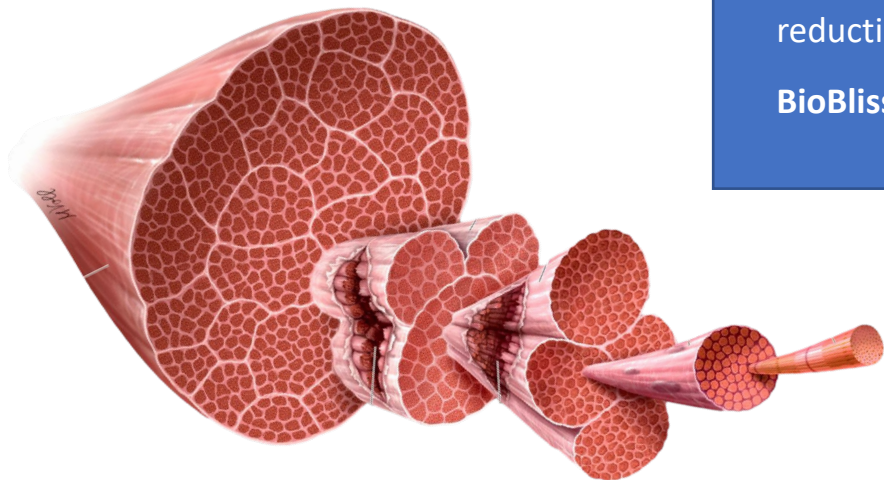
Increased blood flow and circulation can help speed recovery by rushing nutrients and amino acids to the micro-tears.

*“Significant improvements to objective and subjective measures of blood flow...indicate that FIR therapy improves blood circulation” [7]*

Increased circulation means that the body’s own ability to repair is promoted, hastening the natural recovery process.

FIR therapy has been tested on athletes to study muscle recovery rates and pain reduction. [8] [9] [16]

**BioBliss. Helping dogs find the calm inside to recover.**



# Why It Works for Healing

Inflammation is a body's defensive reaction to injury, infection or damaged tissue, which helps to destroy, remove or separate the injured tissue and the virus from the rest of the body.

While the inflammatory process is generally normal and natural, some diseases – like autoimmune arthritis – can cause the immune system to trigger an inflammatory response where there is no foreign substances to fight off.

FIR therapy has been tested on animals and athletes to study muscle recovery rates and pain reduction. [8] [9] [16]

Recovery-aiding nutrients get sped throughout the system, while acidic waste is moved away from the affected area and help reduce inflammation.

FIR therapy can alleviate the discomfort that occurs while the body heals. Naturally.

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# Why It Works for Calming



FIR therapy has been tested on animals and athletes to study muscle recovery rates and pain reduction. [8] [9]

But increased circulation and a faster return to status offers another benefit: The reduction and rapid dissipation of the stress hormone, cortisol. [10]

In humans and dogs, cortisol is the fear or flight hormone. [13]

*“Cortisol is a well-known stress marker in dogs and reflects the activity of the hypothalamic-pituitary-adrenal (HPA) axis” [11]*

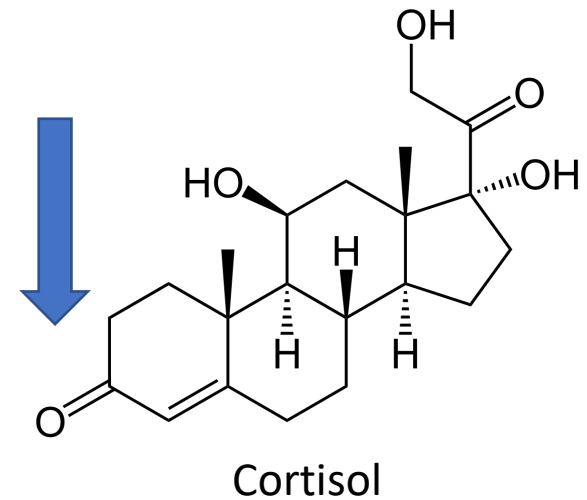
Anxiety is a physiological reaction to an outside stimuli. Vessel constriction, rapid heart beats, and hormone imbalance are symptoms of anxiety.

*“Overall, the data presented in these reports suggest that oxidative stress can provoke anxious behavior” [12]*

During anxiety-inducing events, FIR therapy can reduce the body’s natural response. And hasten a return to pre-stress balance.

Bioceramic-applied FIR has been shown to normalize the effects of psychological stress and oxidative stress conditions, reducing the intensity and duration of anxious episodes. [14] [15]

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# References

- [1 Far infrared radiation \(FIR\): its biological effects and medical applications](#)
- [2 Functional Textiles for Improved Performance, Protection and Health](#)
- [3 Infrared functional textiles](#)
- [4 Infrared and skin: Friend or foe](#)
- [5 Biological effects and medical applications of infrared radiation](#)
- [6 Biological activities caused by far-infrared radiation](#)
- [7 Effects of Far-Infrared Therapy on Foot Circulation Among Hemodialysis Patients With Diabetes Mellitus](#)
- [8 Effects of Far-Infrared Radiation lamp therapy on recovery from muscle damage induced by eccentric exercise](#)
- [9 Clinical utility of far-infrared therapy for improvement of vascular access blood flow and pain control in hemodialysis patients](#)
- [10 Analysis of serum cortisol levels by Fourier Transform Infrared Spectroscopy for diagnosis of stress in athletes](#)
- [11 Physiological stress reactivity and recovery related to behavioral traits in dogs \(\*Canis familiaris\*\)](#)
- [12 Oxidative stress and anxiety](#)
- [13 Oxidative stress in lymphoma: similarities and differences between dog and human](#)
- [14 Effects of far infrared rays irradiated from ceramic material \(BIOCERAMIC\) on psychological stress-conditioned elevated heart rate, blood pressure, and oxidative stress-suppressed cardiac contractility](#)
- [15 Direct and Indirect Effects of Ceramic Far Infrared Radiation on the Hydrogen Peroxide-scavenging Capacity and on Murine Macrophages under Oxidative Stress](#)
- [16 Promotive Effects of Far-Infrared Ray on Full-Thickness Skin Wound Healing in Rats](#)