

TANNING 101

What is a tan?

A tan is the darkening of the outermost layer of skin (epidermal) from exposure to the sun or comparable ultraviolet (UV) light, which causes melanocytes to increase their production of melanin to the skin. When stimulated by the shorter waves of UVB light, the melanocytes produce melanin. The melanin then moves up through the epidermis and is absorbed by other skin cells. When exposed to the longer waves of UVA light, the melanin oxidized or darkens, producing a tan. In short, UVB synthesizes pigment, while UVA ensures their oxidation. Together, the two create a tan. The more melanin production, the darker the skin.

A tan is your body's way of creating its own natural SPF (sun protection factor.) Over thousands of years, those closer to the equator needed more protection from the intensity of the sun and thus evolved to continuously produce melanin resulting in darker skin. Those farther from such intensity found light skin was more efficient and evolved to only produce melanin when needed. Yet seasonal changes, such as hot summers, meant that the protection of darker skin was sometimes needed and thus the ability to tan developed.

A good tan for a normal Caucasian person is equal to about SPF 4, which means it takes 4 times longer before mild sunburn sets in. Using SPF 15, for example, means it takes 15 times longer before sunburn sets in. Unfortunately that does not tell us much about how long we should stay in the sun. That depends on your skin type, which is whole different topic.

For a better understanding of UV rays, see "What are the different types of Ultraviolet Radiation."

Why tan indoors?

Modern indoor tanning facilities strive to offer many more benefits than just being safer due to more controlled exposure to indoor tanning rays. Indoor tanning is cooler than sitting in the "blistering" sun, as well as far more likely to limit sunburn due to the emphasis on education and moderated exposure. The privacy of an indoor tanning bed or booth allows more complete exposure to the benefits of the tanning rays, allowing a more even, golden tan than uncontrolled outdoor tanning. All without any sand clinging to your skin, and no insects with which to contend. Tanning indoors has the following advantages:

- Fast (just minutes over hours)
- Full body tan with no tan lines
- Convenient and easily accessible
- Relaxing
- More controlled environment
- Educated staff on tanning safely
- Clean and sand-free
- Weather independent
- Year round tan
- Private (no crowds or onlookers)
- In preparation for prolonged sun (to prevent a painful and damaging burn)

Why don't I look any darker when I've just come from tanning?

Don't be surprised if when you leave a tanning center your color is only slightly darker. It will continue to darken over the next few hours as your body reacts and produces skin pigmentation. Furthermore, people with fairer skin may find it takes several weeks before a base tan is firmly established while others will see immediate and sweeping bronzing.

Is there anything I should do to prepare before tanning?

Yes. There are many things you can do to prepare for your tan to ensure best results. The single most significant thing is to use indoor tanning salon-formulated lotions just before tanning (see "[Do I really need lotion?](#)"). However, for even best results, consider the following:

The day of:

- Exfoliating your skin may help remove any dry layers that potentially decrease tanning results. However, avoid over-scrubbing or irritating the skin at least several hours before tanning.
- Keep skin moisturized, but make sure there isn't any SPF in your moisturizer, makeup, or anything else you put on for the area to be tanned as such ingredients will diminish your results.
- Do not apply alcohol or anything else that might dry the skin since dry skin deflects UV rays making it less likely to tan.
- Check to make sure your not taking any medication that causes photosensitivity.

Just before tanning:

- Remove any makeup and cosmetics.
- Use salon-grade tanning lotions.

The day after tanning:

- Immediately after tanning, moisturize your skin again.

- Your skin will continue to get darker over the next 4 to 24 hours, so check its color to make sure you didn't get any overexposure or to see if perhaps you might be able to tolerate staying in longer.
- Continue to moisturize your skin at least once in the morning and once at night over the next few days at least.

How long will my tan last?

The length of time it takes before your tan completely fades varies slightly from person to person and depends on the depth of your tan. However, the epidermal (outer layers of skin) is constantly and slowly renewing itself with the regenerating process taking approximately one month for the all layers to reach the surface and be shed. In short, your tan will not likely last more than one month.

Why do I need to wear eye protection?

A tan is created by UV rays penetrating the upper layers of your skin. The skin around your eyes is the thinnest in your body and UV light can easily penetrate that skin to reach your eyes even when your eyes are closed. Repeated unprotected exposure to UV light (whether indoor or from Mother Nature) may cause long-term damage to your eyes. In fact, the eyes are very sensitive and any damage that happens to them is cumulative, which is why as kids so many of us are told to never look directly at the sun. All of our tanning eyewear complies with at least the minimum Federal Regulation 21 CFR 1040.20, which states that indoor tanning eyewear transmit less than 0.1 percent of UVB, and less than 1 percent of UVA as proved in carefully controlled tests. In short, it is important that you always protect your eyes whether it be while tanning indoors or when outdoors. Besides, you have nothing to lose!

Why is it suggested I remove my contact lenses?

If you are wearing FDA approved contact lenses while the eyes are kept closed and proper protective eyewear worn, then UV light is blocked from penetrating the eye or lens. However, the heat generated by indoor tanning equipment could cause the eye to dry making the lens uncomfortable. As a result, it is suggested that contact lenses be removed even if tanning outdoors. At a minimum, eye drops should be used both before and after tanning.

Do I really need lotion? What does it do?

Just about everyone benefits from using a good quality tanning lotion. The skin is constantly drying out. Although it replenishes, it is often not quickly or adequately enough, especially for the tanner. Dry skin has many negative consequences including reflecting UV light (reducing the results from

tanning) and leaving the skin feeling less soft and more inelastic. Tanning lotions help in three ways:

1. Intensify tanning results. Salon-quality indoor tanning lotions are created to react specifically to UV rays to help you tan as quickly, evenly, and as fully as is naturally possible. Unlike most retail-bought lotions, many indoor tanning salon lotions are specially formulated to temporarily stimulate the skin to oxygenate more quickly during tanning resulting in a richer and darker tan with **up to 70% more color**.
2. Get a longer-lasting tan. Indoor tanning lotions re-moisturize and care for your skin to create a beneficial, soft skin barrier helping you to both tan faster and to have a longer-lasting tan.
3. Condition the skin. Indoor tanning lotions have many other ingredients in them to care for your skin, such as anti-oxidants, to minimize any sun damage. Have you ever skipped the condition when washing your hair? You probably noticed your hair felt dry and rough. Your skin reacts the same way when lotion isn't used.

Your skin is like a rubber-band. If left out in the sun with nothing on it, it is much more likely to become damaged, dry, and crack. However, the same rubber-band left outside in the sun will retain it's soft-elastic feel much longer when a good lubricant is used on it. Since most professional-grade lotion manufacturers prohibit the sale of indoor tanning lotions at retail chains, the best (and likely only) location to buy a quality tanning lotion is from an indoor tanning salon.

Can I just use a good moisturizer rather than a tanning lotion?

Although some moisturizers work exceptionally well for home use, only those designed for indoor tanning contain the proper ingredients for use in a tanning salon. Many non-tanning salon lotions smear and cloud the acrylics on tanning beds leading to physical damage and poor tanning quality through the damaged acrylic surface. The only way for a tanning salon to fix the surface is through expensive replacement of the acrylic, which is why most salons prohibit the use of non-professional grade lotions. Also, indoor tanning lotions are specially formulated to absorb into your skin quickly as described in the question "[Do I really need lotion?](#)"

What are the different types of ultraviolet radiation?

The sun puts out three different types of ultraviolet radiation (UV): UVC, UVB, and UVA. According to NASA, UVC rays are the most harmful, but fortunately are completely absorbed by the ozone layer and normal oxygen. UVB rays--often called the "burning rays"--are mostly absorbed by

the ozone layer, but a portion of UVB rays do get through. UVA is NOT absorbed by the ozone.

Because UVC rays are completely absorbed by the ozone, they pose no threat to those of us here on Earth. UVB is typically the most destructive form of UV radiation because if overexposure occurs, it has enough energy to cause photochemical damage to cellular DNA, yet not enough to be completely absorbed by the atmosphere. UVB effects can include erythema (sunburn), cataracts, and development of skin cancer if overexposure occurs. UVA is the most commonly encountered type of UV light. UVA exposure has an initial pigment-darkening effect (tanning) followed by erythema if the exposure is excessive. Atmospheric ozone absorbs very little of this part of the UV spectrum. UVA is needed by humans for synthesis of vitamin D. Most phototherapy and tanning booths use lamps that primarily produce UVA with a hint of UVB to kick-start the tanning process.

What does SPF do for me?

SPF (sun protection factor) is a multiplier showing the number of times the skin is protected against ultraviolet rays (usually UVB) compared to unprotected skin. SPF's are put into sun screens to either deflect or absorb UV rays helping a person prolong his or her time outdoors before sun burning. For example, a fair-skinned person often times turns red after only 15 minutes in the sun in Hawaii (sometimes called the initial burning time.) If that person uses a sunscreen with SPF 2, it takes 2 times as long, or 30 minutes for the skin to turn red. Using SPF 15 multiplies the initial burning time by 15, so it takes 225 minutes, or 3 hours forty-five minutes, for that person's skin to turn red. Sunscreen takes about 20 minutes to be absorbed and interact with the skin so apply it before you head out and reapply about once an hour or so, especially after swimming. Also, ratings are based on tests where a liberal amount of lotion is applied; usually more than what most of us use meaning you may not be as protected as you think. For that reason, it is usually not true that SPF 30 will give you 3 times the protection of SPF 10. Here is a short guide to help you decide what SPF to use.

Recommended SPF		1 hr	2 hr	3 hr	4 hr	5+ hr
Skin Type						
1.	Very Fair / Extremely Sensitive	15	30	30	30	45
2A-2B.	Fair / Sensitive	15	15	30	30	45
2C- 3A.	Fair	15	15	15	30	30
3B.	Medium	8	8	15	15	30
4..	Dark	4	8	8	15	15

Not sure of your skin type? If in doubt, use a higher SPF. SPF 15 blocks 93.3% of the most harmful rays while SPF 30 blocks 96.7%. Although some sunscreens claim SPFs higher than 30, the added protection at such higher levels is often insignificant.

Why does my skin sometimes have a "burnt skin" smell after tanning?

The smell is NOT burnt skin at all. This "after tan" odor that some get is caused by a friendly bacteria that lives on the surface of the skin. The smell is a result of the bacteria getting hot on the skin. Most of the indoor tanning lotions we carry include both antibacterial ingredients to eliminate the odor and fragrances to minimize the after-tan odor.

ABOUT TANNING IN GENERAL

Q: Is tanning natural?

A: Yes. Tanning is your body's natural protection against sunburn; it's what your body is designed to do. Anti-tanning lobbyists falsely refer to this process as "damage" to your skin, but calling a tan "damage" is a dangerous oversimplification.

In fact, it's much like calling exercise "damage to your muscles." When you exercise, you are actually tearing tiny muscle fibers in your body. At first glance, when examined at the micro-level, this tearing could be called "damage." But this damage on the micro-level is your body's natural way of building stronger muscle tissue on the macro-level. So to call exercise "damaging" to muscles would be misleading. The same can be said of sun exposure: your body is designed to repair any damage to the skin caused by ultraviolet light exposure. Developing a tan is your body's natural way of protecting against the dangers of sunburn and further exposure.

It is the professional indoor tanning industry's position that sunburn prevention is a more effective message than total abstinence, which ultimately encourages abuse. We believe ours is a responsible, honest approach to the issue.

Q: How does your skin tan?

A: Whether you tan outdoors under the sun or indoors in a professional tanning facility, the tanning process is the same. This natural process takes place when your skin is exposed to ultraviolet light. Here is an overview.

Light is composed of energy waves that travel from the sun to the Earth. Each energy wave can be identified by its length in nanometers, (nm), which is one-billionth of a meter. Light can be broken into three general categories: infrared, visible and invisible. Ultraviolet light is in the invisible light spectrum.

There are three kinds of ultraviolet light: UVA, UVB and UVC. Two of those categories, UVA and UVB, are used in indoor tanning equipment.

Tanning equipment is designed to replicate UVA and UVB produced by the sun, but tanning lamps emit the light in carefully controlled and government-regulated combinations. As a result, the user has control over their exposure. That's why people face greater risk of

overexposure tanning outdoors than they do by using tanning equipment indoors.

Tanning itself takes place in the skin's outermost layer, the epidermis. There are three major types of skin cells in your epidermis: basal cells, keratinocytes and melanocytes. All play different roles in the tanning process.

Everyone has roughly the same number of melanocytes in their bodies—about 5 million. Your heredity determines how much pigment your melanocytes can produce. Melanocytes release extra melanosomes whenever ultraviolet light waves touch them. This produces a tan in your skin.

The tanning process is your skin's natural way of protecting itself from sunburn and overexposure. Calling a tan "damage to the skin" isn't telling the whole story. Your skin is designed to tan to protect itself.

Q: What is a base tan?

A: A tan is the body's natural protection against sunburn. Your skin is designed to tan as a natural body function.

Each year, millions of Americans visit professional indoor tanning facilities in the spring, prior to sun-filled vacations or outdoor summertime activities, to establish what tanners know as a "base tan." Doing so enables vacationers to gradually increase their exposure to ultraviolet light without burning.

Q: How is "moderate tanning" defined?

A: Moderation means avoiding sunburn at all costs. How to accomplish this goal will mean something different to each person. That's one way the indoor tanning industry can help. Salon professionals attempt to educate each tanner on how to best avoid sunburn for their individual skin type.

Q: Is moderate exposure to the sun or ultraviolet (UV) light good for your health?

A: Absolutely. There is a growing body of well-conducted, validated scientific research demonstrating that the production of the activated form of vitamin D is one of the most effective ways the body controls abnormal cell growth. Moderate exposure to sunlight is the only way for the body to manufacture the vitamin D necessary for producing activated vitamin D.

Q: How much vitamin D do you need?

A: A 1997 report by the National Academy of Sciences Institute of Medicine recommends 200 IU/day of vitamin D for women aged 50 years or younger, 400 IU/day for those aged 51-70 and 600 IU/day for those older than 70 (1) years. However, leading experts believe these recommendations are inadequate for protecting the public's health. According to these experts, the country faces an epidemic of vitamin D deficiency. New science strongly supports changing the current recommendation to 1000 IU/day for adults.

Q: What is the best way to help the body produce the activated form of vitamin D?

A: Moderate exposure to sunlight is the only way to help the body manufacture the vitamin D it needs. While eating salmon or mackerel and drinking fortified milk or juices is a step in the right direction, it is practically impossible to consume enough of these products each day to obtain the required amount of vitamin D through diet alone. For example, one would have to consume ten glasses of fortified juices or milk every day of the year to meet nutritional requirements without the benefit of sunlight.

Q: How does the skin make vitamin D and what limits its production?

A: Sun or UV light is the fuel that permits the body to manufacture vitamin D. But the amount of vitamin D formed in a given period of exposure depends on the color of your skin—that is, how rich your skin is in melanin. Melanin absorbs UV radiation. Therefore it diminishes the production of vitamin D.

The darker a person's skin, the longer he or she has to be in the sun or exposed to UVB radiation to form a significant amount of vitamin D (2). Like melanin, sunscreen also absorbs UV radiation and therefore greatly diminishes the skin's vitamin D production. For example, sunscreen with a SPF of 8 diminishes a person's ability to produce vitamin D by 95%. In addition, winter sunlight in the northern latitudes (New York City, Boston, and San Francisco) does not have enough UVB radiation to produce vitamin D in the skin. This is why many Americans are at risk for vitamin D deficiency, especially in the winter (3). A national study showed that 42% of African-American women ages 15 to 49 were deficient in vitamin D by the end of winter. In addition, a recent study of young Caucasian women in Maine (ages 9-11) found that 48% of them were vitamin D deficient by the end of winter.

Q: Is moderate exposure to UVB radiation associated with decreased rates of cancer and other disease?

A: Yes. In fact, the inaugural edition of *The Journal of Cancer* in 1941 reported that the increased risk of non-melanoma cancer was a trade-off for the decreased risk of internal cancer as result of moderate exposure to UVB light.

According to the nation's leading expert in the field, Dr. Michael F. Holick, a professor of medicine, physiology and biophysics at the Boston University School of Medicine, relatively brief exposure to sunshine or its equivalent in tanning beds several times a week can help to ward off a host of debilitating and sometimes deadly diseases, including osteoporosis, hypertension, diabetes, depression (4), and cancer of the bladder, breast, colon, ovary, uterus, kidney, and prostate, as well as multiple myeloma and non-Hodgkin's lymphoma (5).

Q: How do the risks of moderate UV radiation exposure compare to the benefits?

A: The protective benefits of UV radiation are undeniable. Warnings about limited and sensible exposure to the sun or UV radiation are exaggerated.

Several researchers, most notably Dr. William Grant, have published peer-reviewed articles demonstrating that in America, for example, increased sun exposure would result in 185,000 fewer cases of internal cancer and 30,000 fewer deaths from cancer of the breast, ovaries, colon, prostate, bladder, uterus, esophagus, rectum and stomach (6). By comparison, about 7,500 people die each year from skin cancer. UV exposure also protects against the development of multiple sclerosis, a devastating autoimmune disease. During adolescence, higher sun exposure (average 2-3 hours or more per day in summer, during weekends and holidays) is associated with a 69% decreased risk of developing multiple sclerosis (7). Similar protective benefits of sun exposure and/or increase in the intake of vitamin D have been reported with other autoimmune diseases like rheumatoid arthritis and Type 1 diabetes, which is usually diagnosed in children and young adults. In addition, studies have shown that sun exposure and/or increase in the intake of vitamin D can delay the onset of prostate cancer three to five years.

Q: What is moderate UV exposure?

A: Moderate exposure is the most responsible way to maximize the potential benefits of sun or UV exposure while minimizing the potential risks associated with either too much or too little sunlight. Avoiding sunburns is critical to moderation. Experiencing painful sunburns before the age of 20—not lifetime exposure to the sun—is the factor associated with an increased risk of malignant melanoma, the most serious type of skin cancer (8).

According to Dr. Holick, optimal sunlight exposure time—and, in turn, optimal vitamin D production—will vary according to skin color, location, and time of year. African-Americans, Hispanics and people with a Mediterranean heritage require more exposure. Blue-eyed, redheads from northern Europe require far less. The one basic rule that applies to everyone is: AVOID SUN BURN. It is the burning of the skin and chronic excessive exposures—not the limited, sensible exposure to ultraviolet light or sunlight—that creates the risk of skin cancer.

Q: How does the medical community characterize skin types?

A: According to the American Academy of Dermatology there are six skin types (9):

Skin Type	Sunburn and Tanning History	Example
I.	Always burns; never tans	Pale white skin; "Celtic"
II.	Burns easily; tans minimally	White skin
III.	Burns moderately; tans gradually to light brown	Average Caucasian skin
IV.	Burns minimally, always tans well to moderately brown	Olive skin
V.	Rarely burns; tans profusely to dark	Brown skin
VI.	Never burns; deeply pigmented	Black skin

Q: What should people do to prevent burning after they've experienced moderate exposure to UV light?

A: The best advice is to cover up and/or—at least once every four hours—apply a generous amount (about 1 ounce) of a broad-spectrum sunscreen that blocks both UVA and UVB rays.

Q: Are tanning beds more intense than natural sunlight?

A: The amount of UV radiation that a person is exposed to depends on many factors including time of day, season and latitude. The spectrum of UV radiation from a tanning bed is similar to that of sunlight. It is less intense than being in the sun at the equator in June at noon, but more intense than being in the sun in Boston or San Francisco at the same time of year. Even with a tan of SPF 4 (a moderate tan), a person who would burn after being in the sun for 30 minutes can now be outside for 120 minutes before getting a sun burn. This highlights an important benefit of moderate tanning—it prevents burning.

Q: What about the increasing rates of skin cancer?

A: Skin cancer has a 20- to 30-year latency period. The rates of skin cancer we are seeing today are most likely the result of bad habits from the 1960s, 1970s and 1980s that were based on ignorance and misinformation about sun tanning. In those days, many people still considered sunburns an inconvenient right of spring, a precursor to developing a summer tan. People believed that sunburns would “fade” into tans, and so tanners hit the beaches and blacktops with baby oil and reflectors. Severe burns were commonplace. Today we know how reckless and uninformed that approach was.

What's more, the photobiology research community has determined that most skin cancers are related to a strong pattern of intermittent exposure to ultraviolet light in people who are genetically predisposed to skin cancer. These skin cancers are not simply the result of cumulative exposure. Once again, this suggests that heredity and a pattern of repeated sun burning are the primary factors associated with skin cancer.

The indoor tanning industry is dedicated to teaching sunburn prevention to the public. In doing so, we believe that we will help to reverse the increased incidence of skin cancer, which is largely the result of misguided behavior that occurred years before the professional tanning industry existed and was organized to teach sunburn prevention.

Q: What is melanoma?

A: Melanoma is a cancer of the pigment-producing cells (melanocytes). An increased risk of melanoma has been associated with people who have moles or repeated sunburn experiences as a child or young adult. Most melanomas occur on non-sun-exposed parts of the body. For example, melanoma is infrequently found on the face. Although melanoma accounts for only 5% of all newly diagnosed skin cancer cases each year, it is responsible for the majority of skin cancer deaths (11).

Q: What are the risk factors for melanoma?

A: Melanoma is the only form of skin cancer that is aggressive with any regularity. However, melanoma skin cancer does not fit the mold of other skin cancers for the following reasons:

- Melanoma is more common in people who work indoors than in those who work outdoors.
- Melanoma most commonly appears on parts of the body that do not receive regular exposure to sunlight. Heredity, fair skin, an abnormally high number of moles on one's body (above 40) and a history of repeated childhood sunburns have all been implicated as potential risk factors for this disease. But because people who receive regular exposure to sunlight get fewer melanomas, it doesn't make sense to say that ultraviolet light causes melanoma. Indeed, some studies suggest that the key risk factor for melanoma is an individual's genetic susceptibility to sunburn itself, not the actual incidence of sunburn.

Furthermore, most studies on indoor tanning have not shown a statistically significant connection between commercial use of tanning equipment and an increased risk of melanoma.

This fact is significant considering that most of the studies did not account for confounding variables such as outdoor exposure to sunlight, childhood sunburns, the type of tanning equipment used and the duration and quantity of exposures. What's more, European studies on this subject do not account for regulations in place in the United States that govern maximum exposure times for people of all skin types.

The professional indoor tanning industry is doing its part to help individuals of all skin types minimize their risks of melanoma by teaching them how to avoid sunburn at all costs. We promote smart, moderate tanning for those individuals who can develop a tan, and we believe that we communicate this message effectively.

Q: Is melanoma associated with UV exposure from tanning beds?

A: No. To date, no well-designed studies support the connection between melanoma and UV exposure from tanning beds (12).

The relationship between melanoma and UV light exposure is complex. For example, melanoma is more common in people who work indoors than in those who work outdoors, and those who work both indoors and outdoors develop the fewest melanomas (13). Further, melanoma most commonly appears on parts of the body that do not receive regular exposure to UV light (13).