SPORT FOR TOMORROW

SPORT FOR TOMORROW is an initiative promoted by the Government of Japan to make an international contribution through sports.

An authorized program of SPORT FOR TOMORROW

Japan's Seasons and Physical Conditioning

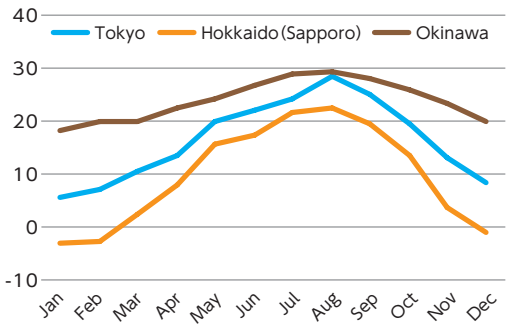
- Climate Change and How to Deal With It -

Otsuka

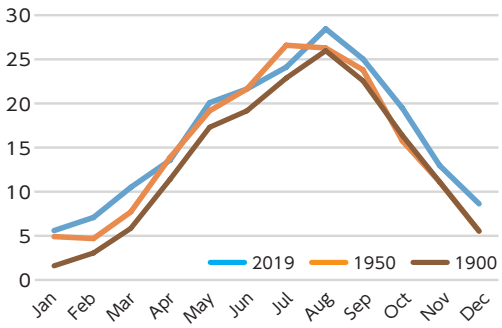
Produced by
Otsuka Pharmaceutical Co., Ltd.

Japan has an elongated shape running north to south. It therefore belongs to various climatic zones, ranging from the subarctic in the north to the subtropics in the south. This makes it possible to enjoy the year's full variety of seasons in Japan. Regional temperature differences are large during the winter but narrow during the summer, when the entire nation becomes hot. On top of this, Japan's climate has been changing in recent years. Annual temperatures are rising, and more and more extremely hot days are being recorded throughout the country. Please bear this in mind as you enjoy sports and sightseeing by conditioning yourself for seasonal characteristics and climate change!

Average temperatures of major cities in 2019 (℃)



Average temperature in Tokyo (℃)



Prepared by Otsuka Pharmaceutical Co., Ltd. based on Japan Meteorological Agency data

Spring

March to May

Spring is a mild and comfortable time of year. It's the perfect season for enjoying sightseeing and outdoor sports while viewing the blossoms and fresh greenery. However, it also has large swings in weather and climate, and some days can be quite cold. It's therefore important to choose your clothing appropriately. Also be aware that the pollen of Japanese cedar and cypress trees is in the air in early spring.

A good way of staying in top condition

Continual intake of "Lactic acid bacterium B240※" is a good idea, as it is proven to alleviate the symptoms of pollen allergies.

Lactic acid bacterium B240 Laboratory

Summer

June to August

The first half of summer is the rainy season for most of Japan except Hokkaido. It is therefore a time of high rainfall. The season's latter half is marked by sunny weather and high temperatures throughout the country. Days with temperatures reaching above 30°C are recorded nationwide, and the temperature difference between Hokkaido and Okinawa shrinks to just 5°C. Beware of heat illness (see the reverse side) if you are in an urban area where the "heat island" phenomenon occurs. Remember to replenish the fluids and electrolytes that are lost through perspiration and try to cool your body from both the outside and inside.

A good way of staying in top condition

Combat heat disorders by replenishing fluids and electrolytes and by cooling your body with appropriate use of ice slurries.

Protect Yourself From Heat Disorders

Autumn

September to November

Often called the "season of sport," autumn is blessed with crisp and sunny days that make it a superb time for physical activity. Enjoy running, walking, and other forms of aerobic exercise while viewing the changing leaves. But keep an eye on the weather reports, as typhoons, late-summer heat, and torrential rains can also happen at this time of year.

A good way of staying in top condition

Practice conditioning for the continued enjoyment of physical activity by consuming BCAAs before exercise and protein immediately afterwards.

BCAA and athletic performance

Winter

December to February

When winter arrives, the Sea of Japan side sees more snowy days while the Pacific side has more sunny days. The temperature difference between Hokkaido and Okinawa grows to more than 20°C. Japan's snow regions offer delightful opportunities for winter sports and sightseeing. However, the climate is cold and dry, so protect yourself from freezing temperatures and stay moisturized. Also wear a mask as a defense against colds.

A good way of staying in top condition

Enhance your body's defenses by continuously taking "Lactic acid bacterium B240" and facilitate quick post-exercise recovery by taking protein.

Lactic acid bacterium B240 Laboratory

※Lactobacillus pentosus ONRICb0240

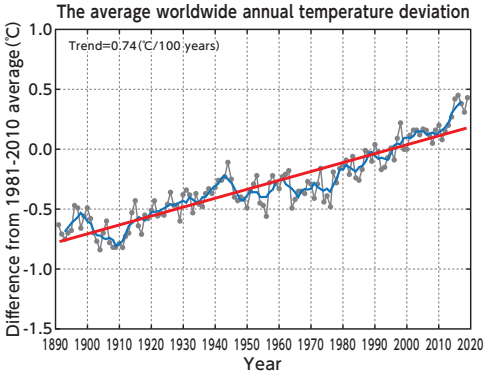
Cooperation provided by KNT-CT Holdings Co., Ltd.

Prepared by Otsuka Pharmaceutical Co., Ltd. based on Japan Meteorological Agency's website

Reference Climate Change in the World and Japan (Temperature Increase)

World: 0.74°C/100 years

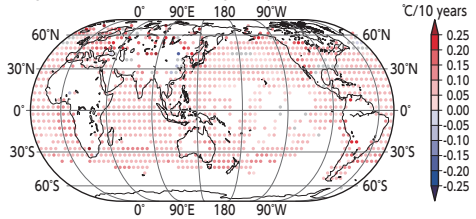
The average worldwide annual temperature deviation



The average worldwide annual temperature is rising with repeated fluctuations. Viewed over the long term, it is increasing at a rate of 0.74°C per century.

Temperatures are rising around the world. However, the rate of increase is not uniform, as it is higher on sea surfaces than on land surfaces. The rate grows notably higher at higher latitudes of the northern hemisphere.

Long-term trend of annual average temperature in 1891-2019

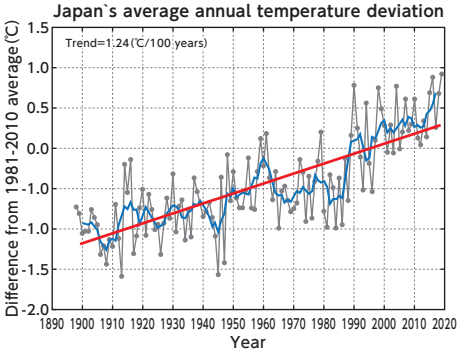


The circles in the figure indicate the long-term trends (per 10 years) in 1891-2019 averaged over a 5 ° x 5 ° grid.
Gray indicates a grid with 90% confidence and not statistically superior.

Source: Japan Meteorological Agency website

Japan: 1.24°C/100 years

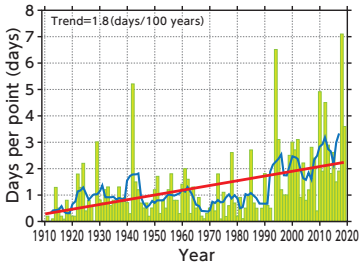
Japan`s average annual temperature deviation



Japan's average annual temperature is rising with repeated fluctuations. Viewed over the long term, it is increasing at a rate of 1.24°C per century.

The annual number of extremely hot days (35°C or higher) recorded throughout Japan is growing. The average number of days for the most recent 30 years is about 2.9 times higher than that for the initial 30-years after statistics were first recorded. In urban areas, a "heat island phenomenon" occurs whereby the temperatures of certain locations rise above those of surrounding areas. This results in average annual temperatures that are between 0.4 and 1.7°C higher in those areas.

Nationwide [13 points average] Number of days with annual maximum temperature of 35° C or higher (hot days)



Source: Japan Meteorological Agency website

An Effect of Climate Change (Greater Frequency of heat illness)

Heat illness are a direct effect of heat and are thought to have a strong correlation with climate change. The number of deaths from heat illness is growing in Japan. The highest number thus far recorded was in 2010, which was a year of record-breaking heat.

Source: Synthesis Report on Observations, Projections and Impact Assessments of Climate Change, 2018, "Climate Change in Japan and Its Impacts"

Reference Protect Yourself From NECHUSHO (Heat illness)

NECHUSHO (heat illness) is a general term referring to any health disorder that is caused by a hot environment. Heat disorders are classified into heat syncope, heat cramps, heat exhaustion, and heatstroke. Normally, the body maintains a balance between thermogenesis (heat production) and thermolysis (heat dissipation). Thermogenesis is the function by which the body creates heat, while thermolysis is the function by which it releases heat outside. A heat illness occurs when this balance is disrupted.

▶Things to do to prevent heat illness in daily activities

- Drink fluids frequently.
- Use air conditioners and fans as needed.
- Cool your body with a shower or towel.
- Monitor room temperature.
- Avoid overexertion when it' s hot.
- Wear cool clothing. Use a parasol or wear a hat when going outside.
- Improve room ventilation.
- Know who to contact in an emergency or time of difficulty.
- Use cool locations and facilities.

▶Efficient rehydration

If you attempt to rehydrate yourself by drinking a large amount of water at one time, you will actually do yourself harm by disrupting the electrolyte balance in your body. Decide the amount you will drink by considering the amount you've perspired. Also replenish the salt (sodium) you have lost through perspiration. The Japan Sport Association recommends drinks with a salt content of between 0.1 and 0.2% and carbohydrate for rehydration to prevent heat illness. However, if you will be exercising for one hour or more, consume drinks with a carbohydrate content of between 4 and 8%.

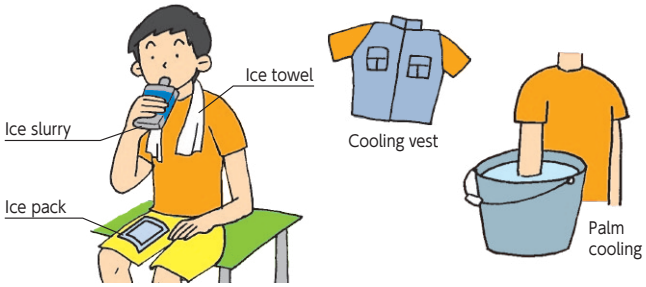
Source: Otsuka Pharmaceutical, "Protect Yourself From Heat illness"
https://www.otsuka.co.jp/health-and-illness/heat-disorders/

CHECK!

Body Cooling

When cooling your body, it is a good idea to consider (1) the cooling method, (2) when to cool, and (3) the length of cooling time. The effects you gain will differ depending on how you combine these three variables.

Cooling methods are largely classifiable into two types. One is external cooling, where you cool your body from the outside through the skin with a cold-water bath in a tub (ice bath) or by using ice packs or ventilation. The other is internal cooling, where you cool the body from the inside by consuming a cold drink, for example.



A characteristic of internal cooling is that it can cool the body's core without greatly lowering the temperature of the skin or muscles. Recently, the ingestion of "ice slurry," a sherbet-like beverage containing a mixture of ice and drinking water, has been gaining popularity. Making an ice slurry with a sports drink is an effective way of replenishing fluids, electrolytes, and carbohydrates while simultaneously cooling the body.

Source: Japan Sport Association, "Guidebook for the Prevention of Heat Stroke During Sports Activities"