0123. Extreme Temperatures Can Threaten Heart Health 极端温度会威胁心脏健康

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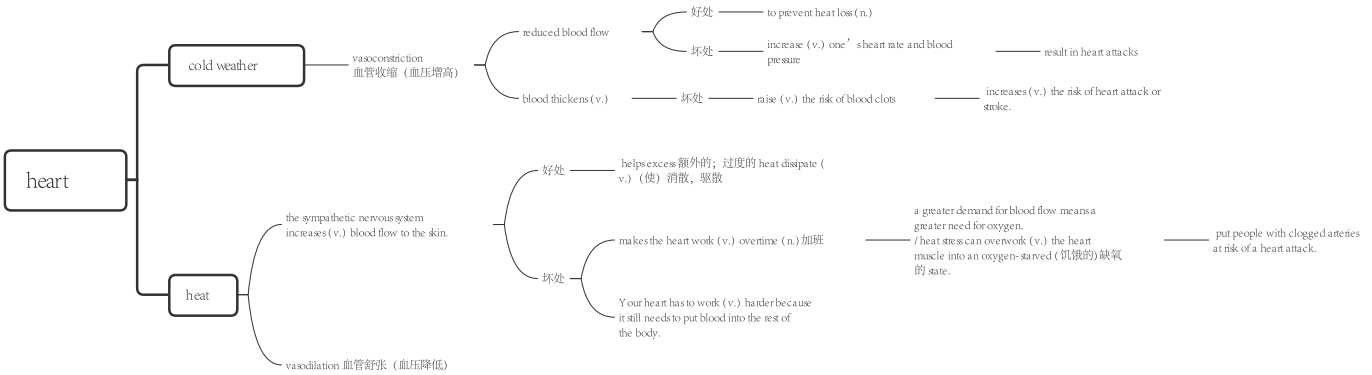
1. Extreme Temperatures Can Threaten (v.) Heart Health 极端温度会威胁心脏健康



Have you ever heard that shoveling (v.)铲；铲起 snow can cause a heart attack? There's actually some truth to that.
你听说过铲雪会导致心脏病吗？这实际上是有一定道理的。

The **physical exertion** (n.)努力；尽力；费力 of shoveling is certainly a factor, but even people **who are used to yard work** can be vulnerable: when temperatures **hit (v.)达到（某水平） exceptionally （用于形容词和副词之前表示强调）罕见，特别，非常 frigid (a.)寒冷的；严寒的 lows**, the heart **can overwork (v.) itself** by trying to prevent the body from freezing to death — especially if **a preexisting 早已存在的，业已存在的 condition** is already **making the organ pump (v.) hard**.

铲土的体力消耗当然是一个因素，但即使是习惯于在院子里工作的人, 也可能很脆弱:当气温降至异常寒冷的低点时，心脏可能会过度劳累，试图防止身体冻死 —— 特别是如果"先前存在的疾病"已经使器官泵血, 变得困难的话。
A growing body 大量；大批；大堆 of research is clarifying the link between environmental temperature and heart health.
越来越多的研究, 正在阐明环境温度与心脏健康之间的联系。

And cold weather is not the only concern.
寒冷的天气并不是唯一的问题。

Studies also show that outdoor heat of 108.9 degrees Fahrenheit 华氏温度计的，华氏的 **triples (v.) the risk of** cardiovascular 心血管的 death.
研究还表明，室外 108.9 华氏度的高温, 会使心血管死亡的风险增加三倍。

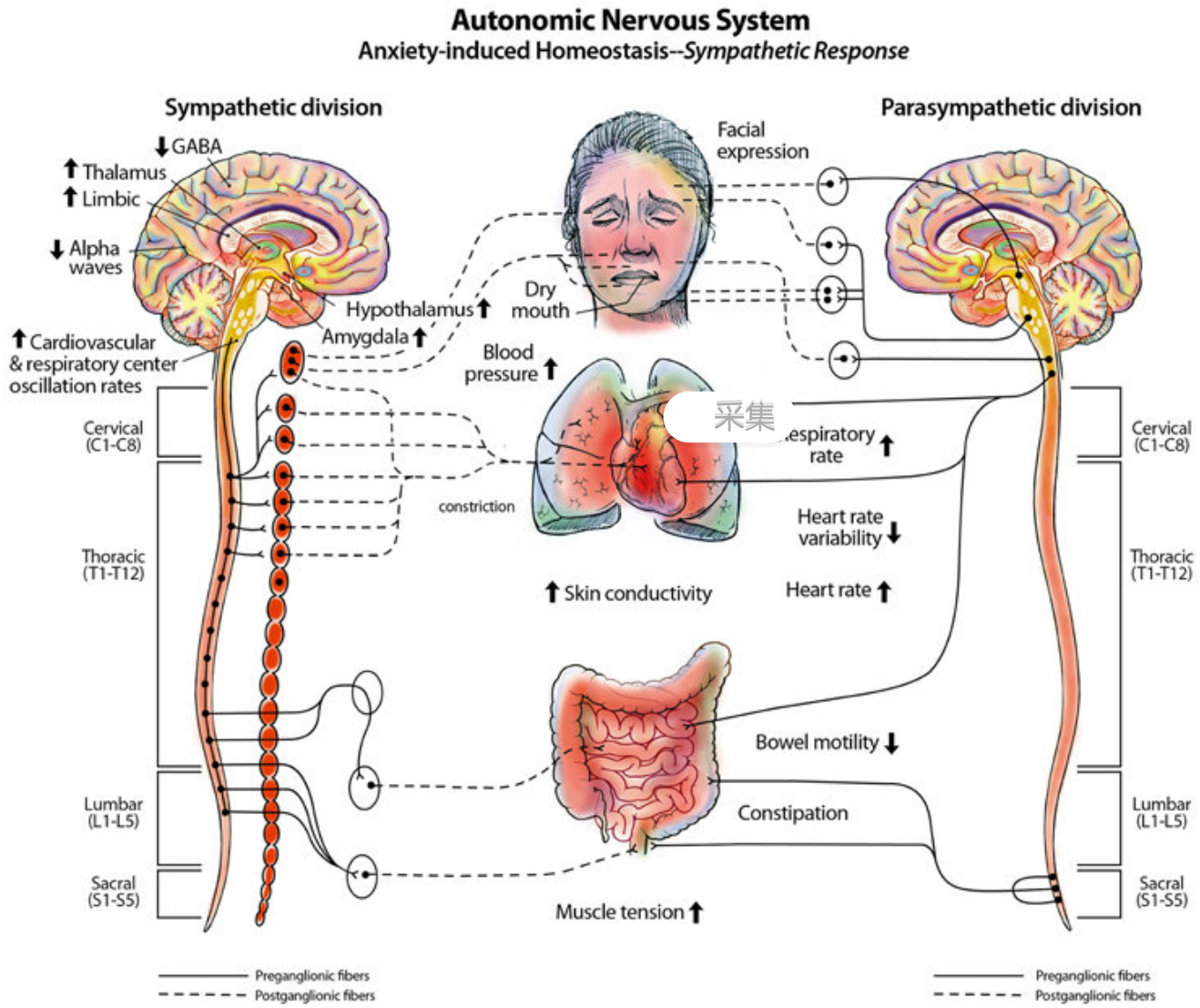
heat is becoming **a more common threat** to heart health.
高温正成为对心脏健康更常见的威胁。

The human body's **core temperature** typically ranges (v.) from 97.5 to 98.9 degrees F.
人体的核心温度, 通常在 97.5 至 98.9 华氏度之间。

When **intense cold** starts to bring this temperature down, the body responds (v.) by activating (v.)激活 **the sympathetic 交感神经的，自主神经系统的;同情的 nervous system** (which is perhaps best known for **setting off** 引发; 激起 a person's fight-or-flight response).
当严寒开始降低体温时，身体会通过激活交感神经系统做出反应（这可能最出名的是引发人的战斗或逃跑反应）。

Example 1. 案例

sympathetic nervous system



外网说明:
https://my.clevelandclinic.org/health/body/23262-sympathetic-nervous-system-sns-fight-or-flight

What is **the sympathetic nervous system** (SNS)?
什么是交感神经系统（SNS）？

Your **sympathetic nervous system** is part of your **autonomic 自主的; 不受意志支配的 nervous system**. It could be called your "automatic" nervous system, as it is responsible for many functions that you don't have to think about to control. This can include control of your heart rate, blood pressure, digestion 消化, urination 撒尿，排尿 and sweating, among other functions.
您的交感神经系统是自主神经系统的一部分。它可以被称为你的"自动"神经系统，因为它负责许多你不需要思考就能控制的功能。这包括控制心率、血压、消化、排尿和出汗等功能。

This triggers (v.) certain mechanisms to preserve **as much heat as possible**.
这会触发某些机制, 来尽可能多地保存热量。

One such mechanism is vasoconstriction 血管收缩（血压增高）, which is when 主 the muscles **in blood vessel walls** 谓 narrow (v.) to prevent heat loss (n.).
其中一种机制是血管收缩，即血管壁中的肌肉变窄以防止热量流失。

Blood, an essential component of thermoregulation 温度调节, normally distributes (v.)分发；分配 heat all over the body; in extreme cold, the sympathetic nervous system **reduces (v.) blood flow to the skin** to preserve warmth (n.)温暖；暖和 in the body.
血液是体温调节的重要组成部分，通常将热量分布到全身。在极度寒冷的情况下，交感神经系统会减少流向皮肤的血液以保持体内温暖。

Vasoconstriction 血管收缩（血压增高） and reduced blood flow keep a person warm, but they also increase blood pressure.
血管收缩和血流量减少, 可以使人保持温暖，但也会增加血压。

主 Research 后定 presented (v.) at **an American Heart Association conference** earlier this year that has not yet been peer-reviewed 谓 showed that people were more likely to have increases (n.) in **systolic (a.)心脏收缩的 pressure** (a blood pressure measurement's **"top" reading**, which represents **the force** pushing against **the artery walls** when the heart contracts (v.)（使）收缩，缩小) during winter, compared with summer.
今年早些时候, 在美国心脏协会会议上发表的"尚未经过同行评审的"研究表明，人们更有可能出现"收缩压"升高（血压测量的"顶部"读数，代表推压动脉壁的力）与夏季相比，冬季（当心脏收缩时）。

Elevated pressure **forces (v.) the heart to work harder** to circulate (v.) blood throughout the body.
压力升高, 迫使心脏更加努力地工作, 以使血液循环到全身。

This strain **can increase (v.) one's heart rate** and blood pressure, which can **result in** cardiac symptoms for some people and can even **result in** heart attacks.
这种压力, 会增加人的心率和血压，这可能会导致某些人出现心脏症状，甚至可能导致心脏病发作。

lower temperatures **may also raise the risk of** blood clots.
较低的温度, 也可能增加血栓的风险。

This is because **blood thickens** (v.) when cold, potentially causing (v.) platelets 血小板 **to stick (v.) 粘贴；粘住 together** in a clot — which **in turn** increases (v.) the risk of heart attack or stroke.
这是因为血液在寒冷时会变稠，可能导致血小板粘在一起形成凝块，从而增加心脏病发作或中风的风险。

HOW HEAT HARMS (v.) HEART HEALTH
高温如何损害心脏健康

Heat, **as well as** cold, can threaten (v.) core temperature regulation.
热和冷, 都会威胁核心温度调节。

In response to extreme heat, the sympathetic nervous system **increases (v.) blood flow to the skin**.
为了应对极端高温，交感神经系统会增加流向皮肤的血液。

主 This, **along with** vasodilation 血管舒张（血压降低）, or the widening of the blood vessels, 谓 helps **excess 超额的；额外的；附加的；过度的 heat** dissipate (v.) （使）消散，消失；驱散.
这与血管舒张或血管扩张一起, 有助于散发多余的热量。

But **on a hot day**, getting more blood to the body's surface **makes the heart work (v.) overtime** (n.)加班；加班的时间.
但在炎热的天气里，更多的血液流向身体表面, 会使心脏加班工作。

The heart **has to beat (v.) faster** to circulate (v.) two to four times more blood per minute **than** it would **in more comfortable weather**.
心脏必须跳动得更快，每分钟循环的血液量, 是舒适天气下的两到四倍。

Your heart **has to work (v.) harder** because it still needs to put blood into the rest of the body.
您的心脏必须更加努力地工作，因为它仍然需要将血液输送到身体的其他部位。

In addition to that, it also needs **to put more blood** through the skin **to help [the body] cool off**.
除此之外，还需要让更多的血液流经皮肤, 来帮助[身体]降温。

If a person **continues to feel overheated**, their brain will keep on **signaling (v.)发信号；发暗号；示意 the heart to beat (v.) faster** — something **that the heart cannot sustain indefinitely** 无限期地 because **a greater demand for blood flow** means **a greater need for oxygen**.
如果一个人继续感到过热，他们的大脑会继续向心脏发出加快跳动的信号——心脏无法无限期地维持这种情况，因为对血流的更大需求, 意味着对氧气的需求更大。

Thus, heat stress **can overwork (v.) the heart muscle** into an oxygen-starved (饥饿的)缺氧的 state.
因此，热应激会使心肌过度劳累, 而进入缺氧状态。

That could **cause (v.) some adverse 不利的；有害的；反面的 events**, particularly **in individuals** with various forms of heart disease.
这可能会导致一些不良事件，特别是对于患有各种心脏病的个体。

People **with clogged arteries**, for example, already have trouble **supplying** their heart **with** oxygen and other nutrients.
例如，动脉堵塞的人, 已经很难为心脏提供氧气和其他营养物质。

The added strain **could put them at risk of** a heart attack.
额外的压力, 可能会使他们面临心脏病发作的风险。

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2. Extreme Temperatures Can Threaten Heart Health

Have you ever heard that shoveling snow can cause a heart attack? There's actually some truth to that. The physical exertion of shoveling is certainly a factor, but even people who are used to yard work can be vulnerable: when temperatures hit exceptionally frigid lows, the heart can overwork itself by trying to prevent the body from freezing to death—especially if a preexisting condition is already making the organ pump hard.

A growing body of research is clarifying the link between environmental temperature and heart health. And cold weather is not the only concern. Studies also show that outdoor heat of 108.9 degrees Fahrenheit triples the risk of cardiovascular death.

heat is becoming a more common threat to heart health.

The human body's core temperature typically ranges from 97.5 to 98.9 degrees F. When intense cold starts to bring this temperature down, the body responds by activating the sympathetic nervous system (which is perhaps best known for setting off a person's fight-or-flight response). This triggers certain mechanisms to preserve as much heat as possible. One such mechanism is vasoconstriction, which is when the muscles in blood vessel walls narrow to prevent heat loss. Blood, an essential component of thermoregulation, normally distributes heat all over the body; in extreme cold, the sympathetic nervous system reduces blood flow to the skin to preserve warmth in the body.

Vasoconstriction and reduced blood flow keep a person warm, but they also increase blood pressure. Research presented at an American Heart Association conference earlier this year that has not yet been peer-reviewed showed that people were more likely to have increases in systolic pressure (a blood pressure measurement's "top" reading, which represents the force pushing against the artery walls when the heart contracts) during winter, compared with summer. Elevated pressure forces the heart to work harder to circulate blood throughout the body.

This strain can increase one's heart rate and blood pressure, which can result in cardiac symptoms for some people and can even result in heart attacks. lower temperatures may also raise the risk of blood clots. This is because blood thickens when cold, potentially causing platelets to stick together in a clot—which in turn increases the risk of heart attack or stroke.

HOW HEAT HARMS HEART HEALTH

Heat, as well as cold, can threaten core temperature regulation. In response to extreme heat, the sympathetic nervous system increases blood flow to the skin. This, along with vasodilation, or the widening of the blood vessels, helps excess

heat dissipate. But on a hot day, getting more blood to the body's surface makes the heart work overtime. The heart has to beat faster to circulate two to four times more blood per minute than it would in more comfortable weather.
Your heart has to work harder because it still needs to put blood into the rest of the body. In addition to that, it also needs to put more blood through the skin to help [the body] cool off.

If a person continues to feel overheated, Crandall says, their brain will keep on signaling the heart to beat faster—something that the heart cannot sustain indefinitely because a greater demand for blood flow means a greater need for oxygen. Thus, heat stress can overwork the heart muscle into an oxygen-starved state. That could cause some adverse events, particularly in individuals with various forms of heart disease. People with clogged arteries, for example, already have trouble supplying their heart with oxygen and other nutrients. The added strain could put them at risk of a heart attack.