

Re: fanning yourself – can it be effective?

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- *From:* The Ghost In The Machine <ewill@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Fri, 4 Apr 2008 23:41:37 –0700
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In sci.physics, RichD

<r_delaney2001@xxxxxxxx>

wrote

on Tue, 1 Apr 2008 17:16:24 –0700 (PDT)

<9df1bef6–9712–4732–9fd1–540bea3725db@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>:

On a hot day, you see people fan themselves to cool off,
with a magazine for instance.

I watched someone doing that yesterday, and said
"That's an illusion, it can't really cool you, that would
be a violation of the 2nd law of thermodynamics.
Actually, you're generating more heat through muscle action."

My friend answered that it can work, through convection.
We argued for a bit, to no conclusion.

Who's right?

There are several additional factors.

[1] The heat sink of the air is large relative to your
heat sink. In other words, there's a lot more air out
there than you in the outside world, and any heat generated
by moving the air around will result in a miniscule rise
in temperature to the air, while cooling your body.

[2] The above does not work if the humidity is 100%,
as the primary mechanism of cooling one's body involves
transpiration of one's sweat. Some cooling transference
may yet occur (and in fact does, as wind chill is a
potentially deadly concept in colder climates); I don't
know how much as I don't know the coupling between skin
and room temperature air. Of course the evaporated sweat
increases the humidity as well, by a miniscule amount.

[3] The laws of thermo apply to the entire closed system.
In short, if you sit there, the entire system will

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change state and the air and your body heat because of chemical reactions proceeding in your body. If you fan, the entire system will change state and the air and your body will heat up a little bit more, as the reactions proceed a bit more vigorously; however, that fanning will also redistribute the heat, allowing the air to heat up at your body's expense and thereby cooling the body.

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Rich

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#191, ewill3@xxxxxxxxxxxxx
Linux. The choice of a GNU generation.
Windows. The choice of a bunch of people who like very weird behavior on a regular basis, random crashes, and "extend, embrace, and extinguish".

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Posted via a free Usenet account from <http://www.teranews.com>

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