

## Why Learning To Hibernate Like A Bear Could Come In Handy

By Meera Dolasia on 02/23/2011



One of the worst ailments that astronauts and people who are bed-ridden for long periods of time suffer from, is loss of bone and muscle. However, bears, which are about the same size as humans, are able to snooze for seven months at a stretch and while they lose their body fat, their muscle mass remains intact.

While scientists have known this fact for many years, it has been very difficult to figure out the reason, largely since bears in **captivity** do not **hibernate** as well, and the ones in the wild, are difficult to track for the entire season.



Recently, a team of scientists led by Brian Barnes from the Institute of for Arctic

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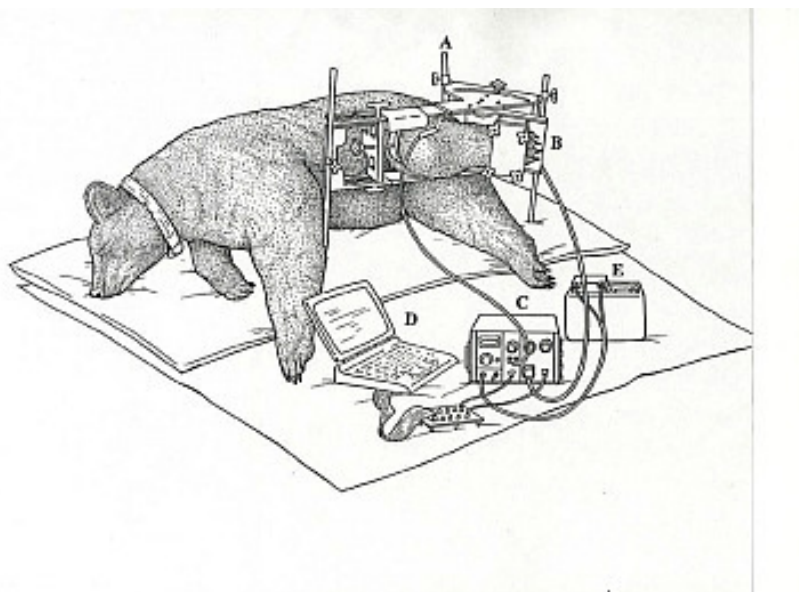
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Biology at the University of Alaska, got an opportunity of a lifetime. They were allowed to capture five black bears, identified as *nuisance* bears because they got too close to human communities and settle them into comfortable nesting cabins that were fitted with cameras, sound recorders, as well as, instruments to measure oxygen consumption. The three male and two female bears were also fitted with transmitters that monitored their temperature, heart rate and muscle activity.

The scientists discovered that unlike small animals, whose body temperatures lowered to near zero during hibernation, the temperature of black bears fell by only a few degrees and for only a few days at a stretch - During the hibernation, the body temperatures of the five bears would fall from the normal range of  $98.6^{\circ}$  -  $100.4^{\circ}$  to between  $91.6^{\circ}$  -  $86.7^{\circ}$  Celsius, after which, they would begin shivering and the body temperature would rise back to almost normal. This cycle repeated itself every 2-7 days throughout the five-month hibernation period.



However, despite the temperatures being close to normal, the bears were able to conserve energy and slow down their metabolism substantially - Their oxygen intake reduced by 75% and their heart rate went from 55 beats a minute to 14 beats a minute.

The scientists believe that herein may lay the secret behind the lack of muscle loss. They suspect that the large amount of fat stored in a bear's body, provides a lower surface to volume ratio, enabling it to lower its metabolic rate without substantially lowering its body temperature. This in turn, helps keep the animal's **neuron** networks, which control muscle tissue, alive and functioning normally, through the hibernation. On the other hand, the neurons in hibernating animals whose body temperatures fall substantially, contract, and have to be repaired each year.



"This hibernation thing just may be the ticket for me. Mind if I join you?"

While the research is still in its **infancy**, Mr. Barnes believes that if we can figure out how bears lower their **metabolism** so drastically, it could help us develop new

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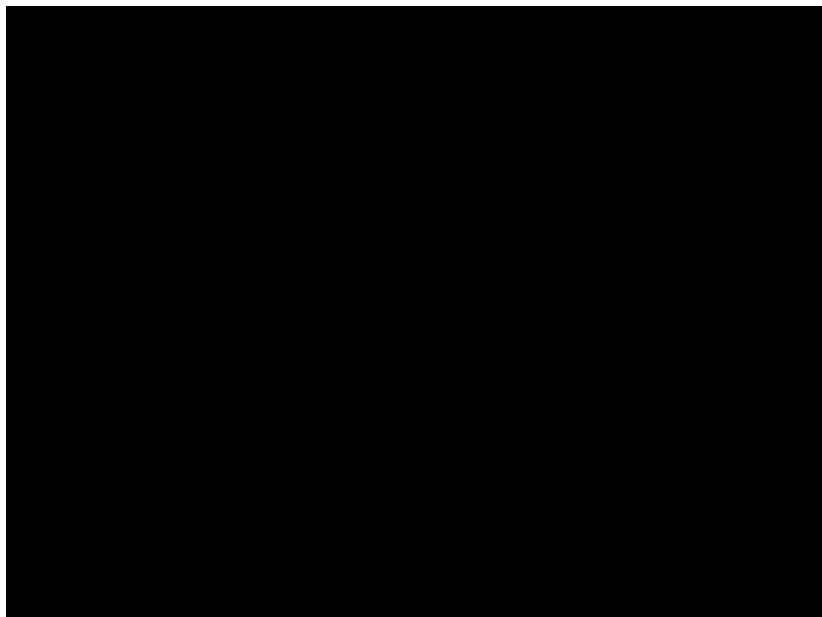
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treatments for people who are bed-ridden, suffering from **osteoporosis** and even allow us to place injured people in a '*suspended*' states, until they can reach good medical care. Not only that, it could also be used to create *hibernation pods* for astronauts, to enable them to embark on longer journeys, without suffering permanent bone and muscle loss.

Resources: [news.yahoo.com](http://news.yahoo.com), [livescience.com](http://livescience.com)



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I didn't know what they were talking about.



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i wish i was abear so i could sleep that long!



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That's really intresting they might be able to make hibernation pods.



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That is so interesting! I hope scientists will be able to use this to help humans.



sophia about 6 hours ago

That is really insteresting! I hope scientists will be able to use this information to help humans.



Emily jUmbly about 6 hours ago

that bear was so loud I could not hear my self think that is how loud



it was it was like "rarrrrr" and I was like 'oww" thats how loud it was. that was so cool !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!



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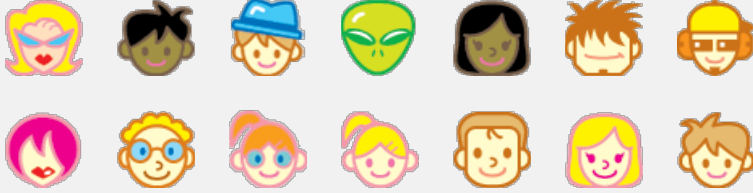
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