

## Passage IV

To survive, the polar bear must solve two major physiological problems: keeping its body at the right temperature and storing enough energy to last between meals that could be a few days or a few months apart. A bear's fur, tough hide, and blubber layer, which can be up to four and-a-half inches thick, provide such excellent insulation that the bear does not have to change its metabolic rate very often to maintain a stable body temperature, even when the surrounding temperature drops as low as  $-34^{\circ}\text{F}$ . As long as a bear is relatively inactive, and is not exposed to wind, it does not burn excessive energy in cold weather.

The negative aspect of being so well insulated is that the bear overheats quickly. At temperatures ranging from about  $-4^{\circ}\text{F}$  to  $12^{\circ}\text{F}$ , a polar bear's body temperature remains fairly constant at walking speeds of up to about two and-a-half miles per hour. After that, internal temperature begins to climb rapidly. When the animal is walking only four and a quarter miles per hour, its temperature is almost  $100^{\circ}\text{F}$ . To move even at this modest speed, a bear burns up thirteen times as much energy as it would if it was lying down.

In fact, to move at any speed the polar bear uses more than twice as much energy as do most other mammals. This inefficiency may be a result of the animal's bulky build and massive limbs and paws, which contribute a sideways motion to the bear's gait. All of these physical idiosyncrasies help explain the polar bear's preference for still-hunting. Lying motionless beside a breathing hole, waiting for a seal to surface, is energy efficient in an environment where calories can be hard to come by.

During the summer, polar bears spend a quarter of their time sleeping. In winter, bears may sleep even more to conserve energy, but they cannot be observed because of the constant darkness. When sleeping or lying down, bears may adopt one of many postures, depending on whether they want to get rid of heat or conserve it. On the open ice a bear may simply lie on its stomach with its hindquarters to the wind. On warm days, bears sprawl out and sometimes lie on their back with their feet in the air. On colder days they curl up, sometimes covering their heat-radiant muzzle area with a paw, or dig a pit for several hours, or even days. Sleeping on a warm day in the shelter of a pressure ridge, a bear may sprawl over and around the irregular ice blocks,

looking more like a jelly fish than the ultimate Arctic carnivore. During the ice-free period in places like Hudson Bay, bears often sleep in pits dug into sand or gravel ridges along the beach.

In the summer, in areas near the coast, there are usually hillsides with patches of snow on them. Females with cubs often climb a hundred yards up and dig a pit for themselves and their young to sleep in, probably to reduce the risk of encounters with adult males that might try to prey upon a cub. From the hillside, they have a good view of the region and are less likely to be surprised by another bear.

How long does a polar bear sleep? The average length of a polar bear's sleep time is seven hours and forty-five minutes, not much different from what a lot of humans need. Bears also tend to sleep more during the day than at night, although in the summer, with twenty-four hours of light the difference is only relative. Being active at night may relate to the behavior of the seals, which feed at night when their prey—Arctic cod and small crustaceans—come up closer to the surface of the water. The seals surface more frequently then, so a bear's chance of catching one at its breathing hole is greater than during the day. In places like Hudson Bay, however, there is no ice on which to hunt seals through the late summer and fall, and bears spend most of their time lying around doing nothing. There's no point wasting energy if there are no seals to catch.

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31. The passage states that an inactive polar bear does not have to “change its metabolic rate” in order to maintain a steady body temperature. This means that the bear does not have to alter
- A. the rate at which it burns energy.
  - B. the time elapsed between feedings.
  - C. the length of time it sleeps.
  - D. the time it takes to chew its food.
32. According to the passage (line 34), “still-hunting” occurs when the polar bear
- F. continues to hunt although exhausted from the effort required.
  - G. hunts in an aggressive manner for animals that are standing still.
  - H. lies motionless beside a breathing hole waiting for a seal to surface.
  - J. entices the desired prey at a distance from its natural home.