WEANERS

What is happening during the post-weaning fast? Yes, the weaners are teaching themselves how to swim and dive and look for food. More specifically, they are making the changes that will allow them to go out to sea and become the deep diving animals they are meant to be.

In order for elephant seals to dive to the tremendous depths they do, and stay down for as long as they have to, they rely on huge stores of oxygen carried in their blood. During the 10 week post-weaning fast they experience a 50% increase in oxygen stores in the form of increased blood volume and hemoglobin concentrations. The oxygen carrying myoglobin level in their muscles also increases.

At the same time, their diving metabolic rate decreases by 50% which allows them to conserve energy while diving. Metabolic rates decrease with age and time spent in fasting.

As fat is turned into lean muscle the weaners are also becoming less buoyant, and more able to dive deeply.

The post weaning fast is an important developmental phase in which the bodies of the pups are changing in ways that will allow them to forage at sea. By increasing the oxygen carrying capacity of the blood and muscle, and by decreasing metabolism and body fat, they are able to make long, deep dives when they leave the rookery.

The weaned pups enter the water for the first time from 2 to 5 weeks after weaning, at first hesitantly and awkwardly, but improvement is rapid. Initially spending only 2% of their time in the water, by the end of the 10 weeks, they are spending 50% of their time in the water, in dives lasting up to 6 minutes, at depths of about 50 feet deep. At the same time, their sleep apnea duration increases from 4 minutes to 8 minutes.

Deep diving ability is not only important in foraging for food, but in avoidance of predators, since great white sharks attack near the surface. Only 50% of the weanlings survive the first year.

Among several seals studied during their first trip to sea, it was found their dives lasted around 10 minutes, at a depth of about 600 feet, with less than 2 minutes at the surface between dives. Furthermore, they already followed the adult pattern of spending around 85% of the time below the surface.

So far there is no research indicating an advantage in being a superweaner. In fact, there was no significant relationship between weaning mass of healthy weanlings, and survivorship to 1 and 2 years of age.

Elephant seals: Population Ecology, Behavior, and Physiology, Le Boeuf and Laws