

Fit Fish

Yellowtails work out in a California tank.

Pedaling pollock? Ab-crunching albacore? Yoga-bending yellowtail? Well, maybe not quite, but some interesting research from the combined efforts of California State University, Long Beach, the University of San Diego, and Hubbs Seaworld Research Institute has shown that exercising fish can improve growth rate significantly. The actual growth rate depends on the species tested, and in juvenile white sea bass for example, there can be as much as a 40-percent body mass difference between exercised and unexercised fish after just three weeks, the researchers report.

"Other kinds of fish, like the California sheephead, may only show modest differences in growth and require longer periods of time before it's significant," says

Professor Kevin Kelley of the Environmental Endocrinology Laboratory at California State University, Long Beach.

Just like humans, it seems fish need to balance their stress levels. A key finding is that the stress hormone, cortisol, activates a "growth shutdown" response in fish. Thus, if the fish experiences prolonged stress, that inhibits production of the primary growth-promoting hormone. Take away the stress and bingo! Bigger fish all around. But how do you exercise a fish? By swimming, of course. Fish "in training" are placed into elongated raceways in which the water flow can be adjusted. More flow and the fish have to swim harder. An added benefit is that the more exercise they get, the more peace and harmony reign in the fish tank.

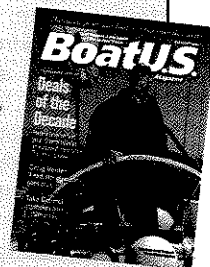
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"We have often seen that fish under conditions of no exercise turn their attention to each other, and show antagonistic interactions," says Kelley. Aside from an ocean of super fit, chilled-out fish, the relationship between stress and growth is extremely important for aquaculture, he notes. "Stressed fish will not perform as well physiologically so disease in an aquaculture setting can be devastating, while the best growth and condition of the fish will lead to enhanced overall productivity. Fish are our fellow vertebrates and they have the same hormones and physiology as humans," Kelley adds. "They can suffer from the consequences of stress much the way we do."

— A.D.

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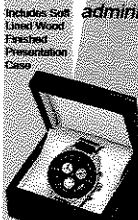
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