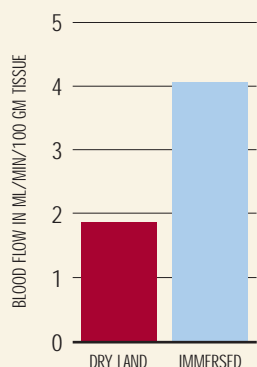


BLOOD FLOW AND IMMERSION

During immersion, more oxygen-rich blood is pushed into the deep muscle tissues — up to 250 percent more. The heart also grows in size, improving cardiac output and overall heart health.

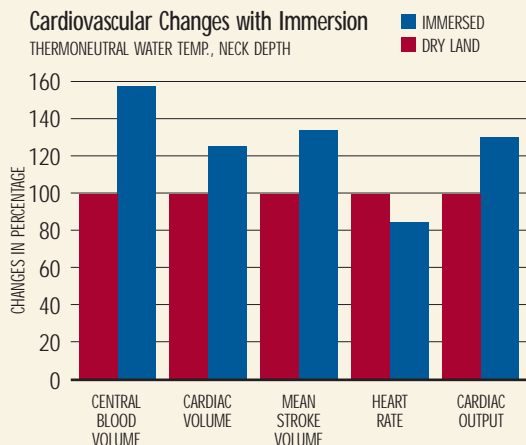
Muscle Blood Flow with Immersion

THERMONEUTRAL TEMP., NECK DEPTH, SEATED



Cardiovascular Changes with Immersion

THERMONEUTRAL WATER TEMP., NECK DEPTH

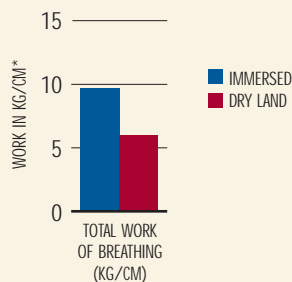


BODY FUNCTIONS AND IMMERSION

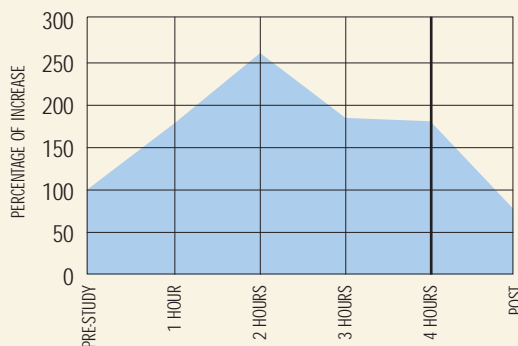
Increased resistance to breathing means more energy — 60 percent more — is expended for respiration. Meanwhile, increased blood flow and other changes cause urinary output to spike.

Energy Costs of Immersed Breathing

NECK-DEPTH IMMERSION AT THERMONEUTRAL TEMP.



Urinary Output Changes with Immersion

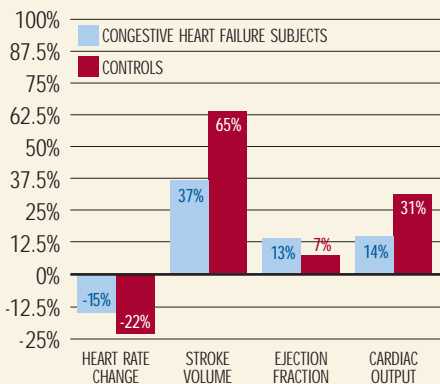


* WORK REQUIRED TO MOVE 1 KILOGRAM OF MASS 1 CENTIMETER

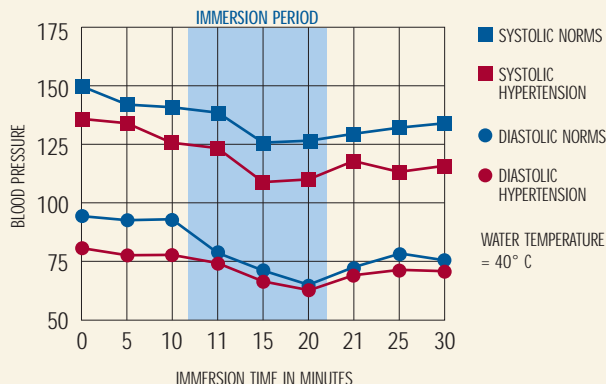
WARM WATER AND IMMERSION

Warm-water immersion has numerous beneficial effects. In congestive heart failure patients, it decreases circulatory resistance and improves the heart contraction efficiency. In hypertensive patients, it lowers blood pressure.

Effects on Congestive Heart Failure Patients



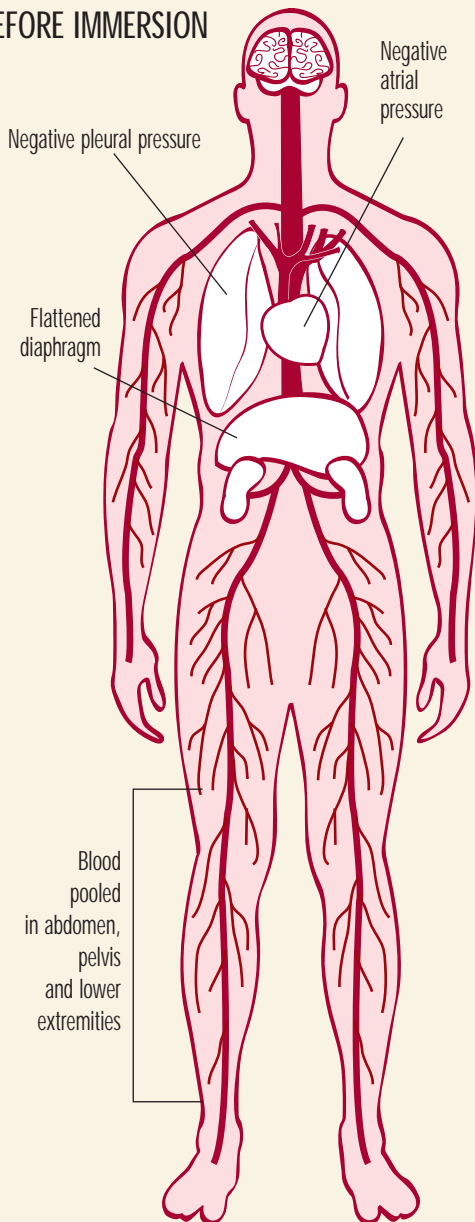
Hypertension and Hot Tubs



PHYSIOLOGY AND IMMERSION

This diagram shows what's happening in the body before a person enters the water, and what happens afterward. The changes are significant, especially those involving blood flow and the heart. The deeper a person is immersed, the more the health benefits increase. At neck level, even the brain is affected because more blood is forced upward from the lower extremities.

BEFORE IMMERSION



DURING IMMERSION

