Jimmy Gerlach, 11, benefited from application of the same technology. Jimmy is afflicted with another rare disease which causes scaling of the outer skin layer. This results in lack of normal heat loss mechanisms and prevents Jimmy from exercising or participating in many everyday activities. Until recently, Jimmy was forced to spend much of his time in air-cooled environments. Responding to a request from Jimmy's father, Ames Research Center designed a personalized portable cooling unit and upper body garment. The battery-powered backpack modeled by Jimmy in the lower photo contains a fluid reservoir and a pump which circulates cool fluid through a network of panels in the garment. Now Jimmy is able to ride a bicycle and join in other outdoor activities.

Liquid-Cooled Garments

Astronauts working on the surface of the moon had to wear liquid-cooled garments under their space suits as protection from lunar temperatures which sometimes reach 250 degrees Fahrenheit. In community service projects conducted by NASA's Ames Research Center, the technology developed for astronaut needs has been adapted to portable cooling systems which will permit two youngsters to lead more normal lives.

Fifteen-year-old Karen MacKenzie (upper photo) was confined to bed or ice-baths for several years due to a disease known as "burning limb syndrome." The disease causes severe pain in the limbs and only cooling brings relief. At the request of Karen's physician, a NASA-Ames team headed by Dr. Bill Williams (shown in photo with Karen) designed a pump-chilling system which circulates cool water through a garment wrapped around Karen's thighs. The cooling garment relieves Karen of pain and prevents further tissue deterioration. Attached to her wheelchair, the system gives Karen the mobility she was so long denied.