

## SALTASH MOUNTAIN

A Farm and Wilderness Camp for boys 12-15. Challenge of extensive backpacking in exciting woods of Northeast. Community living in rugged, wilderness setting. Swimming and canoeing on beautiful mountain lake, gardening, pioneering skills, lumberjack sports.

Jack B. Hunter

Farm and Wilderness Foundation  
Plymouth, Vermont 05056

### SCOTTISH WILDLIFE

Holidays and courses run by the late Gavin Maxwell's colleague John Lister-Kaye, 7-14 days in and around the Inverness-shire highlands, and the Isle of Skye with some accommodations in the Lister-Kaye's own home and in a private hotel owned and run by Lord Macdonald. All in price with guides, food & accommodation, transport, from £67.50 per week. Details from Highland Wildlife Enterprises, Cannich, Inverness-shire. (Please include postage.)



We feature (for 2):

- Middle Eastern Style Dinner
- Hearty Lentil Soup
- Mountain Macaroni (& Cheese!)
- and our new-tastier-spicier
- Mexican Style Dinner

For free info, write us:  
Natural Food Backpack Dinners  
P.O. Box 532, Corvallis, Ore. 97330

### \*save weight with Chuck Wagon Trail Meals

Under 20 oz. per day. Waterproof. Guarantee good eating on the trail. Broad variety. Big selection of snacks.

SPECIALISTS IN SMALL ORDER - MAIL ORDER SERVICE. FAST DELIVERY!

Send for full details to:

CHUCK WAGON FOODS  
Dept. BP5, Micro Drive, Woburn, Ma. 01801

## FOOD

FOR BACKPACKERS  
FREEZE DRIED/DEHYDRATED  
#10 CANS OR FOIL AND PLASTIC  
PACKED—We specialize!!

Free Catalog  
STOW-A-WAY SPORTS  
RT. 3A  
COHASSET, MASS. 02025

## MUSHROOM HUNTER'S FIELD GUIDE

BY ALEXANDER H. SMITH

Field use size . . . the foremost guide for identifying edible and non-edible mushrooms. 90 color illus. 200 black-and-white illus. \$9.95.

The University of Michigan Press  
615 E. University, Ann Arbor MI 48103

# YOU & YOUR GEAR

## PHYSICAL FITNESS

by Don Hardin  
and Brian Kelly

In the summer of 1974, at the University of Texas at El Paso, we completed a research project to help identify some of the factors that determine how much weight can be effectively carried in a backpack and to what extent the backpacker's performance is affected by his age, lack of fitness or being overweight.

The 15 men who volunteered as subjects ranged in age from 21 to 45 years. In order to find their levels of physical fitness, they were given an exhaustive test. A prediction was made for each volunteer's maximum ability to utilize oxygen during hard exercise. The ability to utilize oxygen is considered to be the best indication of cardiovascular efficiency or fitness because it indicates how well the body can respond to hard physical work. The greater the ability to utilize oxygen, the higher the level of physical fitness.

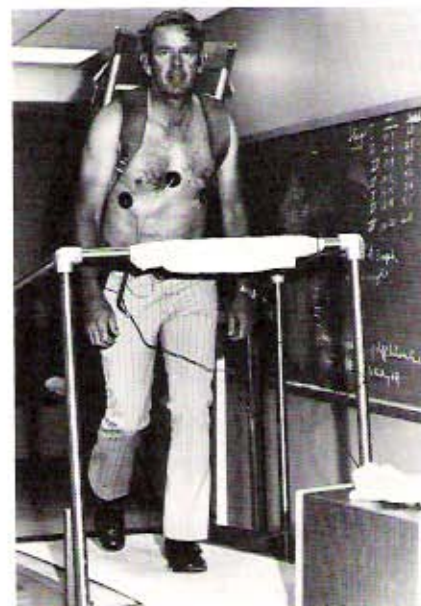
For each person, there is theoretically an ideal body weight. By taking measurements of how much fat a person has at such places as the abdomen and back of the upper arm, and measuring the width of the knee, it is possible to come up with a predicted ideal body weight for people of varying heights and ages. The difference between each man's predicted weight and actual weight was used to determine how far overweight he was. It is frequently claimed that excess body weight has the same effect as the ad-

dition of that amount of weight to his pack.

Consideration of age as a factor in backpacking is important because there are many people past the first flush of youth who feel they are too old to backpack.

Our research team used a motor-driven treadmill running at three miles per hour at a 12 percent grade. The subjects carried pack loads of 20, 25 and 30 percent of their own body weights until their heart rates reached predetermined levels indicating they were becoming inefficient at handling the load. The level in most cases was approximately 160 beats per minute. The scores for each subject were calculated by how many minutes and seconds it took his heart to reach 160 beats while carrying the differing loads. All data were then treated to determine the relationships between levels of fitness, age, degree of overweight, and performance with packs of different weights.

The walking pace chosen, three mph at 12 percent grade, was considerably more than a hiker would un-

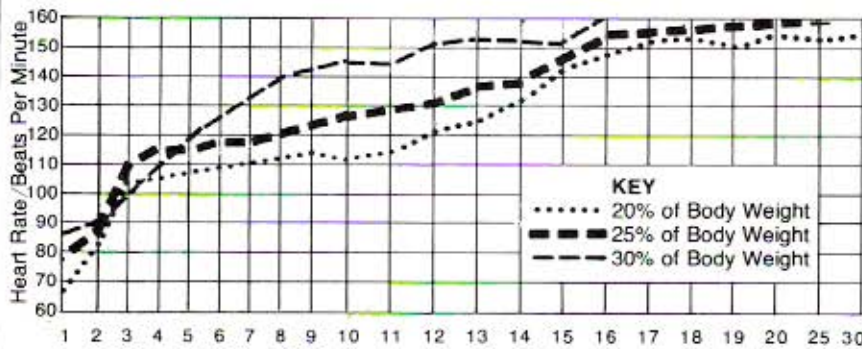


The team used a motor driven treadmill running at three miles per hour at a 12 percent grade.

dertake under normal circumstances. Most hikers average two to 2.5 miles per hour on a level trail if they are carrying loads like those we used. But we wanted to develop a stressful situation in a relatively short while to yield data relevant to actual packing.

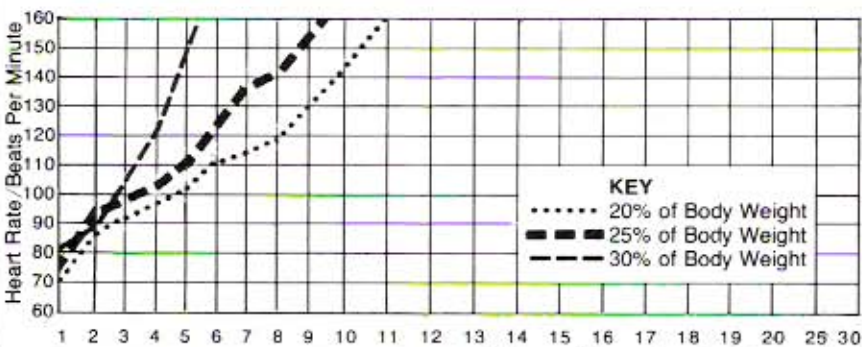
After we analyzed the data, it became apparent that physical fitness

**158 LB. MAN, AGE 43 YEARS  
HIGH PHYSICAL FITNESS**



Time in Minutes for Heart Rate to Reach 160 Beats/Minute Carrying Packs of Different Percent of Body Weight on Treadmill 12% Grade at 3 M.P.H.

**163 LB. MAN, AGE 22 YEARS  
LOW PHYSICAL FITNESS**



Time in Minutes for Heart Rate to Reach 160 Beats/Minute Carrying Packs of Different Percent of Body Weight on Treadmill 12% Grade at 3 M.P.H.

was the factor most influential in backpacking performance.

As could be expected, the subjects as a group performed better with 20 per cent of their body weight as pack loads than they did with the heavier loads. It appears, furthermore, that individuals who carry light loads well also carry heavy loads better than other people do. In other words, they demonstrated the highest levels of physical fitness. Some of the best performers were overweight men in their forties, while some of the worst performances were turned in by men in their twenties who were not overweight.

The results of our study are summarized as follows:

**Physical Fitness**

Physical fitness appears to be more closely related to pack-carrying performance than to either age or weight. Therefore we concluded that packers should be physically fit before at-

tempting difficult hikes.

**Pack Loads**

Lighter loads are desirable. Nevertheless, up to 30 per cent of body weight can be easily handled by fit packers in fairly difficult situations.

**Overweight**

Excess body weight will affect performance to some degree, but it decreases as a factor with higher levels of physical fitness.

**Age**

Physically fit older people should not find backpacking too strenuous.

A prospective backpacker should be in at least average physical condition before attempting a trip of more than one day's duration. If not, he may be a burden to the rest of his party. Guidelines that may be used to judge adequate levels of fitness are the ability to run, jog or walk 1¼ miles in 12 minutes or the ability to walk without a pack two miles on a good surface in 28 minutes. ■



the  
exciting  
world  
of  
ascente



*For the ultimate in down parkas, sleeping bags, related lightweight products, and backpacking tents*

**See your Local ASCENTE Dealer**

or send for FREE Brochure  
Pacific/Ascente, P.O.Box 2028

Ascente, Calif. 93718