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WOMEN'S SPORTS & FITNESS

BONUS 48-PAGE
SPORT SHOE GUIDE



**10 WAYS
TO GET
YOURSELF
GOING**

FIRE ON ICE

**KATARINA WITT AND
DEBI THOMAS FACE OFF**

GREAT ADVENTURE!

**PADDLING CANOES FROM
THE ARCTIC CIRCLE TO
THE END OF THE EARTH**



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FITNESS AT ZERO-G

These workouts are weightless

If you think it's hard to stay in shape on earth, imagine how much more difficult it is in space.

Without gravity, leg muscles atrophy. Bones lose calcium into the bloodstream. And while you're floating around, it's hard to place any demands on your cardiovascular system.

These are big concerns for scientists who are planning for life on the first orbiting space station, set for launch in the early 1990s. Although the astronauts will be in great shape when they leave earth, how can they maintain their fitness level in orbit? The question becomes especially significant when you consider that occasionally the astronauts will have to perform extremely demanding tasks, such as maneuvering one-ton satellites.

Dr. Donald Stewart, a NASA flight surgeon at the Johnson Space Center in Houston, is putting together an exercise program for the men and women who will live in space for several months at a time. He says they will need to

do one and a half to two hours every day of both aerobic and strengthening exercises. "NASA is looking at all the exercise gear on the market and evaluating it for space application. Our leading contender now is a treadmill with a harness on the waist and over the shoulders to recreate a one-G [downward] force, similar to what we flew on Skylab." Another device under consideration: a bicycle/ergometer for aerobic workouts combined with an anaerobic pulling device for maintaining strength in all the large muscle groups of the body.

Stewart says it's a bit early to know for certain, but he guesses the crew members will probably be put on an exercise prescription of a half hour on the treadmill, a half hour on the combination bicycle/pulling device, and a half hour using some small, hand-held strengthening devices. "Not weights, obviously," he adds.

To help motivate the astronauts during the long, strenuous workouts, NASA officials plan to mount video display terminals on the machines and give crew members a choice of games and movies. Maybe *Star Trek*?

—Eleanor Smith



LOOK BEFORE YOU LEAP

Pros and cons of the rubber band theory

Originally imported from Europe in the 1970s as a "secret" training technique, plyometrics was touted as the link between speed and strength. A decade later, plyometric drills have gained popularity as a method of developing strength for such sports as basketball, volleyball, and gymnastics.

Plyometric training relies on the myotatic reflex of a muscle, which occurs when the muscle is forced to stretch prior to a contraction. Forced stretching produces a more powerful muscle contraction than would otherwise be possible, just as stretching a rubber band gives it the power to shoot across a room when released. Proponents of plyometrics believe that by constantly repeating the forced-stretch, explosive-contraction process, athletes can train their muscles, tendons, and ligaments to be more powerful.

In one drill, called depth

jumping, an athlete steps off a bench two to three feet high. Immediately upon landing, she jumps as high as possible, using the myotatic stretch (from landing) to gain extra explosive power. Other popular exercises based on this principle include bounding, hopping, and box drills.

As the popularity of plyometric training grows, so does the controversy about it. Although the mechanics of the myotatic reflex are known, the theory that the elastic properties of tendons and muscle tissue can be trained to become more efficient at storing energy (for explosive power) remains unproven. No conclusive evidence exists to demonstrate that plyometrics is a productive training method.

In fact, it can expose an athlete to a high risk of injury. During plyometric drills, the muscles, bones, and connective tissue act as natural shock-absorbers. But when stress exceeds the ability of a joint to absorb it, the joint gets injured. Possible problems include heel bruises, shin splints, knee damage, stress fractures, and vertebral compression. Young athletes, whose muscles and bones are not fully developed, are especially vulnerable to these kinds of injuries.

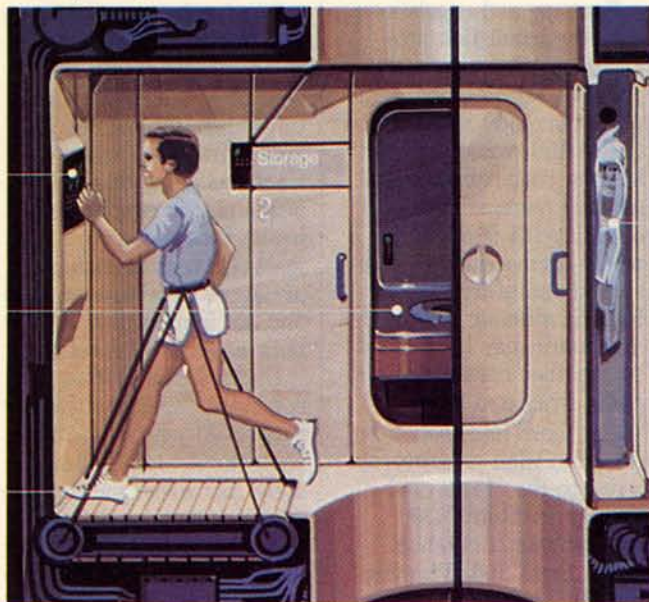
So before taking the big leap into plyometrics, evaluate the risks. Ask yourself: Is it worth it?

—Matt Brzycki

RAILS TO TRAILS

Locomotives give way to bicycles

In the 1920s, 260,000 miles of railroad track crisscrossed the nation. Today an average of 3,000 miles of track is abandoned



ILLUSTRATIONS (ABOVE) BY HOWARD B. LEWIS, (BELOW) COURTESY NASA

