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A Big Lift For Fitness

Once maligned, even feared, weight lifting has won Dr. Peter Karpovich's endorsement as a sound off-season training aid for baseball and tennis players, swimmers—and even golfers

Dorothy Stull

There is news for coaches in all sports. Weight lifting, feared for years as a dangerous or at best one-sided way of building up the body, may instead be the best training method for all male athletes—not only football players, shotputters and other heavyweights, but even swimmers, golfers and tennis players.

That, at least, is the opinion of a man who has, perhaps, done more than anyone else in the **U.S.** to put sports on a scientific basis, and who for years opposed weight lifting: Research Physiologist **Peter V. Karpovich** of **Springfield College**. **Karpovich's** change of heart was first disclosed in his latest book, *Weight Training in Athletics* (Prentice-Hall, \$4.95), co-authored with **Jim Murray**, a longtime authority in the field. The book recommends specific weight training regimens for 12 different sports. Some of these are illustrated on the following pages. In each case they have been designed for the muscles most used in that activity and, except where indicated, should not be used indiscriminately.

For a growing band of athletes **Dr. Karpovich's** conclusions simply confirmed what they had found out for themselves. Says Swimmer Al Wiggins: "I seriously doubt that without weight lifting I'd have progressed as far as I have in swimming." The two-month period Wiggins once needed to get back in shape for a new season has been cut, with weights, to one to three weeks.

Bob Richards, the world's greatest pole vaulter, says that during the recent Olympics he kept weights in his room and "used them every day until one week before the Games." **Harold Connolly**, world record holder in the hammer throw, predicts that "when weight training catches on universally, the marks are going to go up." Other stars, among them **Golfer Frank Stranahan**, Tennis Champion Frank Sedgman, Outfielder **Jackie Jensen** and Sculler Jack Kelly Jr., have also proclaimed the value of weight training.

"I used to think weight lifters were musclebound," Karpovich said recently, "especially between the ears. I was strongly against the sport, but now I'm its guardian angel. It only proves how one should always be ready to change."

Wedged in behind his desk in the **Springfield** office, where books and papers spill from shelves in disarray, **Karpovich** recalled with gentle self-mockery a moment from long ago.

"The first suspicion I had that I might be wrong about weight lifting was when **Bob Hoffman** [U.S. Olympic weight lifting coach] brought John Grimek and **John Davis** to **Springfield** for a weight lifting demonstration. I had heard as a boy that strong men can't scratch between their shoulder blades, so in the question period I said very sweetly: 'Will you please ask Mr. Grimek to scratch his back between the shoulder blades?' Of course, they thought I was crazy, but I wished I was not there when Grimek scratched first with one hand, then with the other, from above the shoulder and then from below. It only shows how all of us cling to our misconceptions, even myself who should know better," he concluded gloomily.

After the eye-opening incident of the scratching weight lifter, **Dr. Karpovich** began testing some of the old saws about the sport. He found that the average grade of weight lifters in three colleges was above B (so much for the area between the ears). He studied 600 men, half lifters and half non-lifters, to determine the truth of the widely held belief that weight training slows down the speed of body movements. The results surprised many confirmed critics: the average speed of the lifters' rotary arm movements was significantly faster than the speed of the nonlifters.

On investigating the alleged dangers of the sport, he discovered that among 31,702 lifters only 494 had sustained injuries from the sport, an incredibly low incidence of 1.5%. Most of these injuries were pulled muscles and tendons. Not one was damage to the heart, and the old belief that weight lifters are prone to hernia was shown to be unfounded. The few hernia cases that were reported were proportionately 20 times fewer than the number found among men entering the service during World War II.

Because of these investigations, and others made both by himself and by other researchers, Dr. Karpovich decided that weight lifting had been greatly maligned and that physiologically it had the same value as calisthenics. "No system of physical education or a system of prophylactic or remedial exercises," he stated, "can exist without the use of resistance in one form or another. Whether you use a bar bell or the weight of your own body, the effect is the same."

The only danger in weight lifting if you are normally healthy, says **Dr. Karpovich**, is in going at it too fast and too hard. His program, based on the principle of progressive resistance, which he and **Murray** recommend in their book, stresses the importance of building up slowly, both weight and number of times an exercise is repeated.

The system of progression is simple: the muscles are trained to do more and more work so gradually that injury or overwork is virtually impossible. To develop strength and improve muscle tone of the smaller muscle groups of the arms, shoulders, upper back and chest, **Dr. Karpovich** suggests a progression from eight to 12 repetitions with a given weight before the weight is increased. That is, when beginning bar bell or dumbbell training, or both, you should experiment to determine how much weight you can use to perform a given exercise eight times without stopping. You should try to add a repetition with each training period, and when you reach 12 you should add five or 10 pounds and drop back to eight repetitions to begin the same upward progression of first adding repetitions and then adding more weight.

The larger muscles of the legs and lower back usually require more repetitions and can stand greater weight increases than the arms and upper body. In working the lower body and legs, **Karpovich** and **Murray** recommend 10 to 15 or 18 repetitions before adding 10 or 20 pounds.

Absolutely necessary for safety in weight lifting are proper rest periods. The Karpovich-Murray program advises lifting only every other day and taking a rest period between each lift of from three to five minutes. (After a rest of only 30 or 40 seconds most lifters fail to raise

a heavier weight, and likewise after a five-to 11-minute rest.)

Dr. Karpovich warns all would-be lifters to warm up before each training session, doing parts of the exercise or using smaller weights and working up gradually to the complete movement. This advice seems paradoxical after all the furor caused by the recent paper in The Journal of the American Medical Association, prepared by **Dr. Karpovich** and Dr. Creighton Hale, which concluded that warming up had no effect on the performance of trackmen. "Because of this experiment everyone thinks I'm against all kinds of warming up," **Dr. Karpovich** complains. "That's not true. I think we need a lot more evidence on the whole subject before we can give up the practice."

The reversal of his position on weight lifting and his qualified skepticism on the warmup are entirely consistent with the scientific approach **Dr. Karpovich** has maintained during his 30 years at **Springfield**. Conducting research of the highest caliber, he has used precision instruments patiently fashioned out of anything handy, including garbage cans and saucepans. He calls his lab the "Kresge Scientific Company" because much of it came from the five & ten.

From this lab he has exposed as fallacies many other revered old coaches' tales, among them the belief that vitamins are a stimulant to athletic performance, that you can't drink milk before engaging in competition, that gelatin gives you strength, and so on.

Dr. Karpovich is also responsible for a virtual revolution in the technique of artificial respiration used in the **U.S.** (he backed the Nielsen method against the generally accepted Schafer method). His studies on swimming, published in the early '30s, showed that most coaches were teaching techniques just the opposite of those that would make swimmers faster. Some of **Dr. Karpovich's** conclusions were: the more the body is submerged, the less resistance it creates to the water and therefore the greater speed a swimmer can attain; more power comes from more frequent arm strokes; the best crawl stroke is choppy, with the arms bent. A convert, Japanese Olympic Trainer Tohru Yanagida, subsequently attributed much of the success of his team in the 1932 Olympics to the **Karpovich** theory.

Dr. Karpovich's interest in making sports more scientific started some 40 years ago when he was a young man in **Russia**. "My brother believed physical education could improve the health of the people. I am not sure that he was entirely right, but I'm positive that physical education contributes to mental health and better utilization of your body as a moving machine." At 60 Karpovich himself weighs 235 pounds and looks like a veteran pro wrestler. "I am not," he says ruefully, "a good example of what they call physical fitness, although what they mean by that neither they nor I really know yet. I don't do athletics any more, but I did when I was younger. Now, on weekends with my wife [Josephine Rathbone, Ph. D., associate professor of physical education at Teachers College, **Columbia**] we go fishing, because we can also talk.


"I went to military medical school in **Leningrad** and graduated as an M.D. in 1919. By 1923 I had permanently separated myself from the military and was consulting physician for the **YMCA** in **Latvia**. In 1925 I came to the States and to **Springfield**, where I've been ever since except for four years in World War II where I ran the physical fitness lab at the School of Aviation Medicine at Randolph Field.

"People ask me why I stay here on this little campus. There's a simple reason. Here we still believe that we shouldn't just teach and at 5 o'clock go home. We try to instill the idea of service—to help a little. But what we need here is money for research. When I'm asked if I use animals in my experiments, I say one animal I would welcome is a golden calf. You can get money for research about red corpuscles to be found in the tail of a white rat, but not for research on how the bodies of human beings work."

Dr. Karpovich, however, is no pessimist. "We are just one second in eternity, why be discouraged about slow progress? Look at what I've learned about weight lifting, after years of opposing it. Of course, I take the cosmic view. What else is there?"

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