

The Conversion of Dr. Peter Karpovich

Jan and Terry Todd
The University of Texas at Austin

One of the great tasks that faces Springfield College," Professor Peter Karpovich told a reporter in February of 1940, "is to fight these muscle builders." The men who promoted lifting, Karpovich explained, were no better than "quacks" and "faddists," and some of them, he continued, believed that heavy training could do "anything—just develop big muscles and . . . (even) all your illness will go (away)."¹ But just two months later, face-to-face with America's foremost "faddist"—Bob Hoffman, founder of the York Barbell Company—Karpovich had an epiphany. Following that first meeting—when Hoffman produced dramatic evidence of the beneficial effects of weight training—this internationally recognized scientist and proud opponent of heavy lifting conducted extensive research that transformed him into strength science's most eminent and visible advocate. Over the next two decades, Karpovich conducted several seminal studies that examined the bedrock on which the arguments normally cited against heavy lifting were built—that it would make a person both slow and inflexible. *Musclebound*. Karpovich then went on to collaborate with Jim Murray on the first science-based book on the subject of strength training. The Karpovich-Murray book, *Weight Training in Athletics*, revolutionized the field of training athletes and was also adopted as a textbook in many PE classes.²

The story of Karpovich's conversion from weight training's antagonist to its "promoter" began, however, not in the laboratory but at a weekly student assembly, or "Forum," held at Springfield College in Massachusetts. Karpovich, his fellow faculty members, and the Springfield student body had gathered on 4 April 1940, to watch a presentation by Bob Hoffman, publisher of *Strength & Health* magazine. Hoffman, who had several world-class weightlifters with him, was a bombastic evangelist for the beneficial effects of weight training. Little did he realize that by changing the attitude of Russian-born immigrant Peter Karpovich,

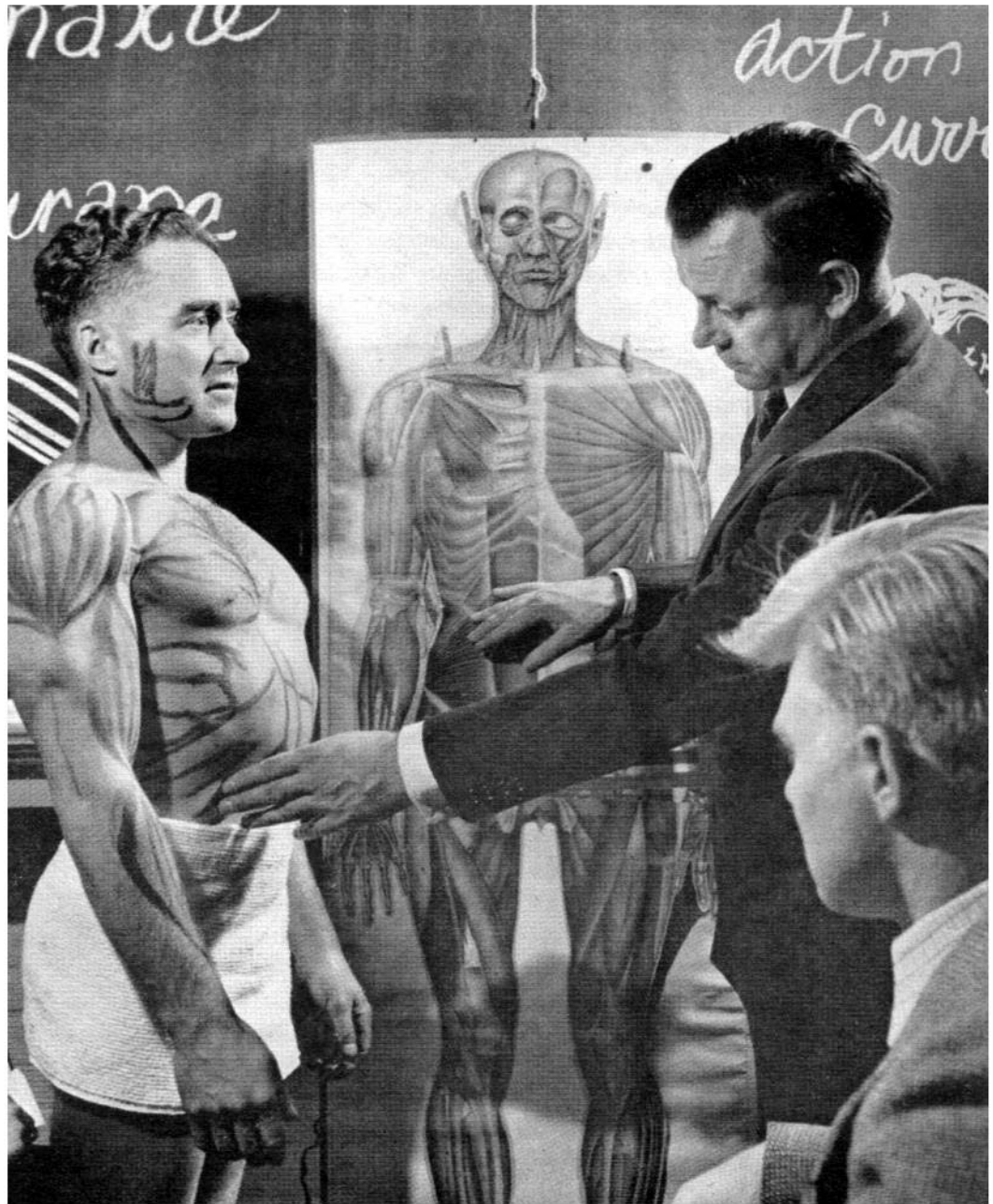
Springfield College's most distinguished professor, he would succeed beyond his wildest dreams in helping to promote his sport.

The Forum show on "The Place of Weightlifting in Physical Education" had been initiated by an undergraduate student, Fraysher Ferguson, a dedicated weight trainer and *Strength & Health* subscriber who was tired of the anti-lifting comments he heard so frequently on campus.³ In an interview in July of 2002, Ferguson said, "I went to Springfield because I wanted to study physical education and I knew that at that time—because of its links to the YMCA—Springfield College was the best place in the country. But when I got there everyone seemed to be against weightlifting and I began to feel ostracized because I believed in it. I was a very good all around athlete but that didn't seem to matter. Professors would say negative things about it in class all the time, and it used to burn me up. I knew they'd never touched a barbell and had no way to know whether it worked or not."⁴ Despite what he was taught in his classes, Ferguson continued to train and distinguished himself as an outstanding athlete at the college. So talented was he, in fact, that it was said of him that he could beat everyone at Springfield in every sport except varsity athletes in their particular specialty. Finally, in his senior year, Ferguson was able to use his personal example as an argument to the Forum's organizing committee and got the group's permission to invite someone to speak on lifting at the Springfield Forum. According to Ferguson, he wrote immediately to Hoffman, "When I sent the letter off, I didn't really expect he (Hoffman) would agree to come. I knew he was really busy but I thought maybe there might be a chance he'd be in the area and we could make it work. And to my total surprise he agreed. When I learned that he was bringing John Grimek, the current Mr. America, and John Davis and Tony Terlazzo, America's two best weightlifters, I could hardly believe it. I can remember it clearly, even though it was 60 years

ago. That show, and what Davis and Grimek did, changed more people's attitudes than anything. You couldn't believe lifting would make you musclebound when you saw them in action."⁵

The resistance to weight training felt by Ferguson was certainly not unusual in the first half of the twentieth century. Since Dr. George Barker Windship's untimely death in the 1870s, and even before, the professional physical education community had warned against the supposed dangers of heavy lifting and had spread the belief that weight training would make a person slow, clumsy, and less flexible.⁶ This view was shared by almost all coaches, military fitness instructors, YMCA directors, and even by exercise physiologists like Karpovich.⁷ In the 1930s, there were even recommendations by some national YMCA officials to ban weightlifting of any sort in all of their facilities.⁸ However, the belief in the connection between weight training and musclebinding was not based on any particular body of scientific research. Instead, it was based on persuasive myths and hearsay (which are beyond the scope of this paper) that had become as embedded within the mindset of the sport science community as they had with the public at large.

In any case, what could have happened at the show on 4 April 1940 to change Karpovich's mind?



Known for his innovative teaching methods, Karpovich turned student Harold LeMaistre into a living muscle chart in this anatomy class. Photo courtesy Springfield College

According to the *Springfield Student*, the campus newspaper, Ferguson had put together a show for the Springfield students that contained a little of everything. In addition to Hoffman and the men from the York Barbell Company, Fraysher invited Bob Jones, then manager of the Milo Barbell Company, to participate. Jones was an exceptional handbalancer and he got things started that morning with a display of difficult gymnastics moves beyond any of Springfield's students, finishing with a

handstand on his thumbs alone. Then, John Davis and Tony Terlazzo came on stage to demonstrate the competition "Olympic" lifts, and as the paper put it, "The ease with which these men tossed around 300 pounds attested to their amazing strength, speed, and co-ordination."⁹ Next on stage was Frank Eversole, whose "feats of contortion" and muscle control were warmly received, and then, finally, John Grimek strode on to the platform to pose for the spectators in the packed auditorium. As Grimek hit his poses, displaying the thickness and incredible density of the muscles that had made him Mr. America, he certainly appeared to be the very embodiment of the "musclebound" athlete.¹⁰

As Ferguson explained recently, "When the demonstrations were over, Hoffman gave only a brief pep talk about the value of lifting because he wanted to leave time for questions." And when Hoffman asked the audience if anyone wanted to ask a question, a murmur spread through the audience as Dr. Karpovich's hand went up. "Everyone at Springfield knew how he hated lifting," Ferguson explained, "and so we were on the edges of our seats wondering what he would ask."¹¹

According to Karpovich, who tells his own version of the story in *Weight Training in Athletics*, what Karpovich asked wasn't for Hoffman to give him some sort of scientific proof of the efficacy of training but, rather, "I sweetly asked Mr. Hoffman to ask Mr. Grimek to scratch his back between his shoulder blades."¹²

The room went silent. Hoffman looked at Grimek. Grimek looked at Hoffman. Finally, according to John Grimek, who was a bit taken aback by the challenge, he said, "But my back doesn't itch," which drew nervous laughter from the rapt students.¹³ "And then I went ahead and scratched my back with my right hand from both above and below and then did it with my left hand. Karpovich sat down."¹⁴ John Davis then stepped to the front of the stage and also easily passed the "scratch test," at which point, according to Karpovich, "the audience roared with laughter at my expense."¹⁵

Grimek, interviewed about the Springfield show in 1993, still had vivid memories of Karpovich more than fifty years later. "Once I'd done all the scratching he wanted, I figured I'd show him who was musclebound. I did a full split for him, all the way down. Then, I leaned over and almost touched my elbows to the floor with my legs straight. We had to hear that stuff all the time, and I was just trying to make the point that it was ridiculous to believe you'd lose flexibility because you

lifted and had some muscles. Later on, John Davis did some standing broad jumps that were a lot longer than anyone at the school could do. That pretty well shut them up."¹⁶

At that time, Davis was reportedly able to make a standing broad jump of well over 11 feet—a remarkable distance for a man of 5'9" and 210-215 pounds or, for that matter, a man of any size. What's more, Davis also treated the students at Springfield to one of his favorite stunts—a standing back-flip performed with a 50 lb. dumbbell in each hand.¹⁷

The impression on the students made by Grimek's flexibility and Davis's leaps was profound and would, quite literally, last a lifetime. Proof of the staying power of the impression they made came in the summer of 1990 when the authors were in Springfield to do research at the college library. As luck would have it, there was an alumni meeting at Springfield College at the same time. There were dozens of men in attendance at that meeting who had been at Springfield in 1940 when Bob Hoffman brought Grimek, Davis, and the other lifters to campus, and five of those men were chosen at random and asked if they remembered "when the weightlifters came to Springfield." Every one of the men had a clear recollection of the event, and were happy to share it. Even though what they were remembering had happened a half century earlier, they could see it as if it had happened yesterday. Apparently, their precise recall of the event owed a great deal to the indelible impression made on all the students by the charismatic Professor Karpovich. They all spoke about his adamant opposition to weight training, and how eagerly they anticipated the fireworks they were sure would erupt at the weightlifting demonstration. They explained that when they heard the lifters were coming to campus they were excited because they knew Dr. Karpovich would challenge them. They all remembered how Grimek looked, saying that they'd seen photos of "musclemen," but that no one had even seen so much muscle on one man before. All of the five alumni remembered how the students looked at Karpovich when Hoffman asked if there were any questions. They recalled when Karpovich asked Grimek to scratch his back and said they knew he wouldn't be able to do it. But when Grimek scratched his back and then did that full split, it was as if they were learning, as one man said, that "black was white and up was down." The alumnae also couldn't stop talking about John Davis, especially the back flip he

did with the two big dumbbells. They said it looked like magic. They also laughingly recalled that after the demonstration the lifters went out with some of the students to a field and proceeded to throw and kick a football farther than any Springfield student could.

The students were not the only ones there who were thunderstruck by what the lifters could do. Dr. Karpovich himself, as has been said, was speechless, but not for long. Following the demonstration, he approached the lifters and apologized for his comment, saying that he had always been taught that heavy lifting would make a person slow and inflexible, but that what he had seen that day made him want to know more about resistance training. In short, Karpovich was inspired by the demonstration to study resistance training and learn what it really did to the body. Unfortunately, the full impact of that April assembly wouldn't be felt for a decade as World War II broke out in Europe and Springfield College decided to close its doors for the duration of the war. Karpovich's Russian roots also became a problem during this era when, after being offered the job as Director of the U.S. Army's research laboratory in Natick, Massachusetts, the Federal Bureau of Investigation raised concerns about his family members back in Russia and the offer was rescinded. However, Karpovich's reputation as a sports scientist was such that the Air Force asked him to work with them instead, and so, as a civilian, he served as Chief of the Laboratory of Physical Fitness for the School of Aviation Medicine at Randolph Field in San Antonio, Texas, from 1942 - 1945.¹⁸ Although he'd done considerable work analyzing energy expenditure in swimming,¹⁹ Karpovich began new lines of research during the war, on artificial respiration,²⁰ the fitness of military personnel,²¹ the oxygen consumption of military personnel involved in various tasks,²² and, as the war finally ended, on rehabilitation techniques.²³ Following the war, as the nation and Springfield gradually returned to normal, Karpovich had time to begin thinking again about the question of strength training. He knew, of course, that to move in that direction was not without a certain professional risk. As his former student, the distinguished past-president of the American College of Sports Medicine, Howard Knuttgen, observed, "Karpovich became interested in strength when it really was not very acceptable." According to Knuttgen, the field of exercise physiology was then dominated by people who primarily studied various aspects of cardiovascular function and strength

was not considered important to the study of physiology. "While I can't give you all the historical reasons," Knuttgen continued, "the weightlifters definitely had a negative image." In fact, Knuttgen explained, "If someone came to the American Physiological Society and was going to give a paper on strength training, people would have raised their eyebrows and asked, 'what the heck is going on here? What are they looking at that for?'"²⁴

Luckily for the strength coaching profession, Karpovich was not a man to be put off by a few raised eyebrows. Nor was he afraid to tell the truth, even when the truth invalidated things he and other exercise scientists had taught and believed for many years. And so, in the late 1940s, when he was once again back to his normal routine at Springfield, Karpovich asked a young master's student, William S. Zorbas, to help him investigate one of the most basic principles of the musclebound mythology—that weight training made a person slower. Karpovich and Zorbas reasoned that since weight training seemed to have the greatest impact on the musculature of the arms and upper body, the best way to test the efficacy of lifting was by creating a device to test the speed of arm rotation. And so Karpovich devised a recording device, attached to a rotary handle, that was able to measure the length of time it took a person to turn the handle 24 times. Karpovich and Zorbas administered the test to 600 men between the ages of 18 and 30 using two main groups. They tested 300 "lifters"—men who had been actively engaged in weightlifting or bodybuilding for at least six months—including a number of competitors from the Senior National Championships in weightlifting. For their controls, Karpovich and Zorbas also measured 300 "non-lifters," who were further subdivided into two groups: 150 Springfield College students, who'd had the benefit of a well-rounded physical education program, and 150 liberal arts students from nearby American International College, who had not participated in regular physical training.²⁵

The results of their research, published in *Research Quarterly* in 1951, were unequivocal. The weightlifters were significantly faster than both groups of non-lifters, leading Zorbas and Karpovich to write, "The findings of this study appear to be contrary to the common opinion of coaches, trainers, and others associated with physical education who believe that weight lifting will slow down the athlete."²⁶

The following year, Karpovich struck another blow for the pro-lifting faction with the publication of

"Incidence of Injuries in Weight Lifting" in the *Journal of Physical Education*. In his introduction to the piece, Karpovich explained that until very recently he had shared the commonly held belief that lifting was a dangerous activity that could cause muscle and tendon pulls, hernias, and even damage the heart. His concern about this led him to question two small groups of recreational weight lifters in the Springfield area who assured him that such injuries were rare and generally trivial. Armed with this information, Karpovich decided to implement a truly monumental survey (especially in a time before computers) of the accident rate in weightlifting. Through the National YMCA Physical Education Council, numerous private weightlifting clubs, and from advertisements placed in *Iron Man* and *Strength & Health* magazines, Karpovich collected data from 31,702 participants during the year 1949-1950. He had begun the survey process with a special interest in whether lifting actually increased heart disease and hernias (frequently cited as being more common in lifters). He was obviously pleased to report that among the more than 31,000 men surveyed not one man had reported any sort of heart condition; that the hernia and hemorrhoid rate was well below the military's selective service norm, and that overall, there was only a 1.5% accident or injury rate reported. Aware that self-reported survey data are frequently suspect, Karpovich checked his figures by personally interviewing 75 weightlifters in New England and found similar numbers in that group for heart and hernia. He also reported only a 4.5% overall injury rate among the 75 New England lifters. Although the second figure was higher than the one from his large survey, it was still well below the injury rates for most other sports, causing Karpovich to conclude that weight training's reputation as "dangerous" was unfounded.²⁷

Karpovich then examined another supporting belief of the anti-lifting platform, the notion that weightlifting primarily appealed to men of lower than normal intelligence. Through his university connections he gained access to the academic records of 392 collegiate weightlifters from three different universities for statistical analysis. Again, Karpovich found the old myths did not hold water. On the standard scale of A for excellent, B for good, C for average, and so on, the weightlifters had just over a B average. Wrote Karpovich, "Probably the same personal quality that enables a student to make himself study is also needed in order to make him stick to the systematic grind of weight train-

ing."²⁸

Karpovich's most thorough defense of lifting appeared in the *Journal of the Association for Physical and Mental Rehabilitation* in 1954. In that piece, Karpovich laid out the most prevalent arguments against weight training—that it damages the heart, that it leads to serious bodily injuries, that it "makes participants 'muscle bound' and reduces their proficiency in other physical activities," and that it is primarily practiced by "egocentric exhibitionists, with homosexual tendencies." However, Karpovich goes on to conclude, "When ... one starts searching scientific literature for a basis for all these accusations, one will soon discover that the evidence is either lacking or inconclusive."²⁹

The post-War years were a productive time for Karpovich. In addition to the work he did with Zorbas, he continued to work on the problem of artificial respiration, and also looked at the impact of "warming-up" on athletic performance.³⁰ In addition, he agreed to co-author the third edition of *Physiology of Muscular Activity* with E. C. Schneider, in 1948, and served as sole author of the book beginning with the fourth edition in 1953.³¹ Nearly every collegiate student of physiology in the 1950s learned their physiology from Karpovich's popular text, which was translated into five languages and went through eight editions.³²

Karpovich also had a major impact on his students in those post-war years according to Howard Knuttgen, who worked at Springfield as an undergraduate lab assistant with Charles Tipton (ACSM president in 1973) in the early 1950s. Knuttgen said about his Russian mentor, "We were both terrified of Dr. Karpovich and fascinated by him." Working on a campus with extremely limited funding and only minimal equipment, Knuttgen recalled, Karpovich had begun to enlist undergraduates like himself and Charles Tipton to help with experiments and to teach lab techniques to the other undergraduates. "We were turned on by physiology, applied exercise physiology, through our undergraduate experience there," Knuttgen explained. While they relished the opportunity to work closely with him, they also feared him. According to Knuttgen and Creighton Hale, who taught with Karpovich at Springfield between 1950 and 1955, Karpovich had a great sense of humor, but he didn't suffer fools gladly. When he gave an exam, for instance, he'd call the students into his office in groups of four or five the week after the test to quiz them about their answers. This terrified the students. When his

probing didn't produce the correct answer, Karpovich told more than one that they were getting a grade shaped like the red corpuscle, "a zero."³³

Karpovich's toughness was also a hallmark of his career as a researcher who, undaunted by Springfield's limited resources for science, did some of his most important work using homemade equipment. A flour can bought in a five-and-ten cent store, for instance, became the drum in a device he called the "natograph," which was used to measure a swimmer's progress in swimming. An aluminum saucer, borrowed from a colleague's wife, played a pivotal role in another study. His was a "junkshop laboratory," he told Jim Murray.³⁴

Karpovich's early life had undoubtedly prepared him to deal well with Springfield's privations. Born Peter Vasilievich Karpovich in Louga, a small town about 80 miles from St. Petersburg on 6 April 1896, Peter was the sixth of nine children. His interest in exercise developed from conversations he had with his older brother, Nicholas, who took classes in gymnastics from two Springfield College alumnae, Eric Moraller and Gregorie Matchikhin, who'd been sent by the YMCA to work in St. Petersburg (later Leningrad, and now St. Petersburg again). Nicholas, the second oldest of the children, took a special interest in his younger brother, and paid for Peter to have French and Latin lessons which the family could not otherwise have afforded. He also introduced Peter to chemistry by telling him it was "magic." Throughout his teaching career, in fact, Karpovich would put on a "magic" show in his lab at Springfield during which he astonished undergraduates by turning water into "cream" and replicating the "burning bush of Moses" trick. Nicholas' inspiration fostered in young Karpovich a desire to study medicine, even though his family had no resources to support his education. So he applied to the Imperial Military Medical Academy in Petrograd where he learned his physiology from the famous behaviorist, Ivan Pavlov, on a government scholarship that barely covered his living expenses. It was a tumultuous education. World War I provided the first complications as the war with the Germans eventually reached St. Petersburg. Because he was a soldier as well as a medical student, Karpovich was called to duty and worked as a medic, crawling through trenches, filled with corpses—while the Germans continued to bomb—searching for those still alive. He saved dozens



Popular as a lecturer, Karpovich delivered many keynote addresses in his lifetime. Here he lectures at the "Health is Wealth" conference of 1964.

of men and was subsequently awarded the St. George Medal for his bravery. Then, in his third year of medical school, the Russian Revolution broke out and he became actively involved in the marches, rallies, and fighting in his area of Russia. After the Communists came to power, Karpovich, who had opposed the revolution, was jailed briefly for not supporting the new party line.³⁵

Following graduation, Karpovich, who was still considered part of the military, was ordered to help fight a nationwide epidemic of typhus that ultimately infected approximately 20,000,000 Russians. The newly credentialed Dr. Karpovich, who had seen only two cases of typhus in his life, found himself in charge of a hospital in the small town of Kotelnich, filled with a diffident and unskilled staff. Karpovich stayed there for eleven months, suffered through a personal bout with typhus, and then, in 1920, fell in love and married Alice Neuman.

Within weeks of his wedding, he was posted to the town of Ekaterinburg. There, in addition to medical duties, he taught physiology and anatomy in the local school. Karpovich was happy with his new situation; he enjoyed his teaching and had begun to think that teach-

ing, and not the practice of medicine, would be his life's work. Then one night, at three in the morning, soldiers appeared at his front door, took him to the train station and loaded him into a boxcar along with the other faculty from the school. He was told he was being detained for activities against the state. Twenty-two days later, Karpovich was finally freed from prison, but he was so physically debilitated by the experience that he could hardly stand. All charges against him were dropped, and Karpovich was told to pack and move to yet another small town, Kamyshlov, to serve as garrison physician. After staying there for several months, he and his wife returned to St. Petersburg—by that time called Leningrad—where he began an intensive postgraduate course in medicine. Six months later, Karpovich received orders to move his family (which now included his son, George) to Mongolia to serve as a military surgeon. Karpovich, however, had had enough. He had a different dream, one that had begun as a boy when he first met the YMCA's representatives in St. Petersburg and one of them suggested that he should become a doctor who studied athletes.³⁶

Karpovich decided that rather than move to Mongolia, he'd defect and try to get to Springfield College in Massachusetts where he could meet his idol, James H. McCurdy, and study with him to learn more about sports medicine. Several of his friends, he reasoned, had gone to Europe and gotten extra medical training, and then returned safely to Russia, so why couldn't he do the same? Little did he know, however, when he left his wife and son behind to start his walk across the swamps and marshes to the Latvian border, that he would never return to his motherland. It was by all accounts a horrendous trip. A companion, who went with him as guide, fell ill with an abscess near his groin and Karpovich ended up performing field surgery on him using his pocket knife and then keeping him hidden in an abandoned bath house on the edge of a small village until he healed. Karpovich told a reporter in 1950, "As ill luck would have it, just as Latvia and freedom were near, we ran into an armed Soviet sentry." However, Karpovich continued, "It pays to be a *fizcultura* fan for just such emergencies. I persuaded the sentry to let us through by hopping on top of him, throwing his gun away and leaving him tied up in the swamp."³⁷

Once inside Latvia, Karpovich's troubles were still not over. The Latvian border guards immediately

picked him up and put him in a concentration camp with other Soviet Russians who were trying to escape the communist regime at home. However, the Latvian guards allowed him to send word to the local YMCA who soon arranged for his release and helped him reunite with his wife and son. Karpovich stayed in the Latvian capital, Riga, for the next three years, working at 'the YMCA from 1922 to 1925 and doing sports medicine work with several local teams. Finally, in the fall of 1925, he entered Springfield College as a special student. He joined the faculty the following next year, at age 30, and became a naturalized U.S. citizen in 1935.³⁸

Creighton Hale, who served on the faculty with Karpovich from 1950-1955, recalled that although Karpovich escaped, he was not unscathed by his experiences. Karpovich suffered from severe claustrophobia, according to Hale, brought on by hiding in a large oven during his escape and being so frequently imprisoned. "He was not at all comfortable being off the ground floor in a building," Hale recalled, "and when he went to New York, he couldn't ride in a subway. He'd go right in one door and out the other." But, said Hale, Karpovich did not lose his sense of humor, or his personal dignity. Hale also noted that, "I don't believe in that field that there was anyone more respected than [Karpovich] was, and I knew all of them—Dill and Morehouse and so on."³⁹

It should be noted that Karpovich's career was not without its rough patches. In 1964, for example, Karpovich found himself in court in a case pitting him and the Federal Trade Commission (FTC) against his former student, Dr. Thomas Cureton, and the Viobin Wheat Germ Oil company. The case resulted from advertising for the Viobin company that claimed wheat germ oil was beneficial for the heart, would increase endurance in middle-aged men, and would help an athlete lift more weight. These claims were based largely on research done by Cureton, then a professor at the University of Illinois. Karpovich took exception to the claims in the advertising and publicly attacked Cureton's research methods. Subsequently, Karpovich received a \$4800 grant from the FTC to do his own testing on the Viobin products. When Karpovich's research failed to support Viobin's claims, Viobin sued. During the trial, Viobin's lawyers discredited Karpovich by demonstrating that his study had not used the Viobin product and, furthermore, that there were serious questions about the veracity of Karpovich's Russian medical degree. The

case was eventually dismissed but Karpovich's professional reputation took a heavy blow.⁴⁰

Karpovich's last published contribution to the acceptance of strength training for athletes was his joint authorship, with *Strength & Health* editor, Jim Murray, of *Weight Training for Athletics* in 1956. Murray recalled his first meeting with Karpovich and his second wife, the famous physical educator Josephine Rathbone, in 1955. "I went to New York thinking I was doing him a favor by letting him in on the project," reported Murray, but, in reality, Karpovich wanted to evaluate Murray's knowledge, "and especially my character before he would agree to collaborate." It was a good meeting, however, and Murray recalled years later, "Looking back, I'm as proud of the fact that Dr. Karpovich was willing to work with me as of anything I've done in my seventy years."⁴¹ *Weight Training in Athletics* achieved what Murray and Karpovich had hoped it would. Karpovich's name on the cover made the book acceptable for use as a textbook by physical educators and reassured coaches that it would not hurt their athletes to lift weights. Prentice-Hall subsequently published a second, revised edition of the book, in 1983.

By the time the second edition came out, however, Karpovich was dead. He retired from Springfield College in 1969 and began shortly thereafter to have major health problems. He did almost no research work after his official retirement, although his biographer reports that in 1972 he was "analyzing the world weightlifting records in order to predict the new records which can be expected in the future."⁴² Sadly, that research does not appear to have been published. On 13 June 1975 Karpovich took an overdose of barbiturates and committed suicide. His wife, Josephine Rathbone, later wrote, "He had gone because his lifework was finished, in a fashion that was very common in Russia."⁴³ Creighton Hale, who was with Mrs. Karpovich at a convention on the day she got the news, said that he didn't think she was surprised that Karpovich had ended his life at age 79.⁴⁴

Thomas Kuhn's seminal work—*The Structure of Scientific Revolutions*—argues that the history of science should not be viewed as a series of "significant discoveries" but, rather, as a series of paradigm shifts that occur with much conflict and resistance from the scientific community itself. Scientists, who have believed in one approach to science, Kuhn argues, find it hard to

give up the "knowledge" supporting the earlier theory or paradigm. This resistance to change, he says, is understandable because, "scientists, being only human, cannot always admit their errors, even when confronted with strict proof."⁴⁵ Only rarely, Kuhn explains, does a scientist "see the light," and then openly admit the error of his earlier thinking. Generally, conversion to the new paradigm is usually more gradual. Kuhn would no doubt have seen Karpovich's conversion to, and impact upon, weight training as an interesting case study. To Karpovich's everlasting credit, he was not afraid to change directions in mid-career or to publicly admit his mistaken belief in muscle-binding. Said Creighton Hale, "He told the story on himself many times. He wasn't afraid to say that he'd been wrong. And, really, from that time on, he was very supportive of strength training."⁴⁶

For more than 25 years now, the National Strength and Conditioning Association has sponsored clinics, symposia, and published several hundred research articles suggesting that strength training is beneficial for athletes because—as it builds strength—it also increases speed and explosiveness, promotes greater flexibility, and tends to make athletes less susceptible to injuries. However, in the first half of the twentieth century, almost all coaches, physical educators, and even exercise scientists believed exactly the opposite. The "paradigm" for strength training until at least 1950 was that weight training was detrimental to athletes and unworthy of study by "serious" scientists. That paradigm shifted in large part because of the remarkable career of Peter V. Karpovich. As Jim Murray put it, "One seldom hears the term 'musclebound' anymore and muscular heroes abound in popular motion pictures, no longer portrayed as clumsy oafs. For that, much credit should go to Dr. Peter Karpovich, whose influence lives on three decades after his death."⁴⁷

Notes:

¹ "Dr. Karpovich Scheduled to Speak," *Springfield Union*. 18 February 1940.

² James Murray and Peter V. Karpovich, *Weight Training in Athletics* (Edgewood Cliffs, N.J.: Prentice Hall, 1956).

³ "Bob Hoffman Exhibits his Troupe at Weekly Forum," *Springfield Student*, 31(10 April 1940): 4.

⁴ Fraysher Ferguson, interview with authors, Columbus, Ohio, July 2002.

- ⁵ A. Parry, "The Medical Sage of Sports," *Esquire* 21 (March, 1950): 68 & 122.
- ⁶ Terry Todd, "The Myth of the Muscle-bound Lifter." *NSCA Journal* 7(3) (1985): 37-41.
- ⁷ Vic Boff, "My Friend: John C. Grimek," *Iron Game History*. 6(1)(1999):10-11.
- ⁸ "Bob Hoffman Exhibits," p. 4.
- ⁹ Ibid.
- ¹⁰ Ferguson interview.
- ¹¹ Murray and Karpovich, *Weight Training*.
- ¹² John Grimek, personal interview, New York, October 1993.
- ¹³ Ibid.
- ¹⁴ Jim Murray, "Weightlifting's Non-lifting Patron Saint," *Iron Game History*. 4(6) (1997): 3-5.
- ¹⁵ Grimek interview.
- ¹⁶ Ibid.
- ¹⁷ A. V. Seetharaman, "Peter V. Karpovich. M.D.: His Life and Contributions to Physical Education," Ph.D. diss., Boston University, 1972.
- ¹⁸ Peter V. Karpovich, "Water Resistance in Swimming," *Research Quarterly* 4(1933 supplement): 21; Peter V. Karpovich, "Effect of Oxygen Inhalation on Swimming Performances," *Research Quarterly* 5(1934): 24; Peter V. Karpovich, "Analysis of the Propelling Force in the Crawl Stroke," *Research Quarterly* 6(1935 supplement): 49; Peter V. Karpovich, "Respiration in Swimming and Diving," *Research Quarterly* 10(1939): 3; and Peter V. Karpovich & K. Pestrecov, "Mechanical Work Done and Efficiency of Swimming Crawl and Backstrokes," *Arbeitsphysiologie*. 10(1939):504.
- ¹⁹ Peter V. Karpovich, "The Best method of Manual Artificial Respiration." *Research Quarterly*, 12(1941): 50; Peter V. Karpovich, "Methods of Artificial Respiration." *Physical Educator*, 2(1942): 112; Peter V. Karpovich, "Ingenuity in artificial respiration," *Air Force*, (January 1944): 60; Peter V. Karpovich, C.J. Hale and T.L. Bailey, "Pulmonary Ventilation in Manual Artificial Respiration," *Journal of Applied Physiology*, 4(1951): 458; Peter V. Karpovich and C.J. Hale. "Energy Expended in Administering Artificial Respiration." *Journal of Applied Physiology* 4(1951): 467; Peter V. Karpovich and C.J. Hale. "Manual Artificial Respiration, Pedagogical and Fatigue Factors Involved in its Use," *Journal of the Association for Physical and Mental Rehabilitation*, 4(1951): 472; Peter V. Karpovich, H.E. Swann and D.B. Dill, "Effect of Rigor Mortis on Tidal Air in Artificial Respiration," *Journal of the Association for Physical and Mental Rehabilitation*, 5(1952): 277; Peter V. Karpovich, H.E. Swann and D.B. Dill. "Ineffectiveness of Artificial Respiration in Rats after Drowning," *Journal of the Association for Physical and Mental Rehabilitation*, 5(1953): 429; Peter V. Karpovich and C.J. Hale, "Artificial Respiration Adapted to Special Conditions," *Journal of the Association for Physical and Mental Rehabilitation*, 5(1953): 717; and Peter V. Karpovich and C.J. Hale. "Modified Pole-top Method of Artificial Respiration," *Journal of the Association for Physical and Mental Rehabilitation*, 5(1953): 723.
- ²⁰ Peter V. Karpovich, "Physical Training for Flyers," *Air Surgeon's Bulletin*, 1(1944): 24; Peter V. Karpovich "Relation Between Bends and Physical Fitness," *Air Surgeon's Bulletin*, 1 (1944): 5; Peter V. Karpovich and R.A. Weiss, "Physical Fitness of Men Entering the Army Air Forces," *Research Quarterly*, 17(1946): 184; Peter V. Karpovich and E.L. Green, "Physical Fitness and Age of Army Air Force Personnel," *Journal of Aviation Medicine*, 17(1946): 96.
- ²¹ Peter V. Karpovich, "Metabolism and Energy Used in Exercise," *Research Quarterly*, 12(1941 supplement): 423; and Peter V. Karpovich & N. Millman, "Vitamin B₁ and Endurance," *New England Journal of Medicine*, 226(1942): 881; Peter V. Karpovich and R.R. Ronkin, "Body Size and Amount of Oxygen Used in Work Simulating Operation of an Airplane," *Federation Proceedings*, 4(1945): 60; Peter V. Karpovich & R.R. Ronkin, "Oxygen Consumption for Men of Various Sizes in the Simulated Piloting of a Plane," *American Journal of Physiology*, 146(1947): 720.
- ²² Peter V. Karpovich, M.P. Starr, R.R. Kimbro, C.G. Stoll and R.A. Weiss, "Physical Reconditioning after Rheumatic Fever," *JAMA*, 130(1946): 1198. & Peter V. Karpovich and R.A. Weis, "Energy Cost of Exercises for Convalescents," *Archives of Physical Medicine*, 28(1947): 447.
- ²³ Howard Knuttgen, personal communication, October 2002.
- ²⁴ Seetharaman "Peter V. Karpovich. M.D, 64.
- ²⁵ W.S. Zorbas and Peter V. Karpovich, "The Effect of Weight Lifting upon the Speed of Muscular Contractions," *Research Quarterly*, 22-2(1951): 145-148.
- ²⁶ Karpovich, P.V. "Incidence of Injuries in Weight Lifting." *Journal of Physical Education*. 48(1951): 71-72.
- ²⁷ J. Murray and Karpovich, P.V, *Weight Training in Athletics*. (NJ: Prentice Hall; 1956): & Peter V. Karpovich "Incidence of Injuries, 71-72.
- ²⁸ Peter V. Karpovich "Weight Lifting," *Journal of the Association for Physical and Mental Rehabilitation*, 8(1954): 20.
- ²⁹ Peter V. Karpovich and C.J. Hale. "The Effect of Warming-up on Physical Performance," *Federation International d'Education Physique Bulletin*, (March 1955). & Peter V. Karpovich and C.J. Hale. "Effect of Warming up upon Physical Performance," *JAMA* 162(1956): 1117. & Peter V. Karpovich, "Warming-up and Physical Performance," *Lancet*, 77(1957): 87.
- ³⁰ Peter V. Karpovich, *Physiology of Muscular Activity*. (Philadelphia: W.B. Sanders & Co; 1953).
- ³¹ Seetharaman, "Peter V. Karpovich. M.D, 118.
- ³² Howard Knuttgen, personal communication, October 2002; Creighton Hale, personal communication, October 2002.
- ³³ Jim Murray, Weightlifting's Non-lifting Patron Saint. *Iron Game History*. 4(6): 3-5.1997.
- ³⁴ Seetharaman, "Peter V. Karpovich. M.D, 126.
- ³⁵ Ibid.
- ³⁶ Parry, "Medical Sage of Sports," 68 & 122.
- ³⁷ Seetharaman, "Peter V. Karpovich. M.D, 172 and Parry, "Medical Sage of Sports," 122.
- ³⁸ Creighton Hale, personal communication, October 2002.
- ³⁹ Seetharaman, "Peter V. Karpovich. M.D, 188.
- ⁴⁰ Murray, "Weightlifting's Non-lifting Patron Saint," 5.
- ⁴¹ Seetharaman, "Peter V. Karpovich. M.D, 190.
- ⁴² J.L. Rathbone. *My Twentieth Century*. Unpublished memoir, on deposit at Babson Library, (Springfield College: Springfield, MA).
- ⁴³ Creighton Hale, personal communication, October 2002.
- ⁴⁴ T. Kuhn. *The Structure of Scientific Revolutions*. (Chicago: University of Chicago Press; 1962).
- ⁴⁵ Creighton Hale, personal communication, October 2002.
- ⁴⁶ Murray, "Weightlifting's non-lifting patron saint," 4.
- ⁴⁷ Ibid.