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Herbert A. deVries: 60 Years of Exercise and Science

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Young Herb deVries was only 14-years old when his father died in 1931, and the U.S.A. was in the full throes of a terrible depression. His family lived in the Teaneck-Ridgewood area of New Jersey, and he worked throughout high school to help make ends meet.

We were hard up against it, but I had a wonderful life in many ways. I was always active, and in the summers when I had a spare minute I went to the beach and was as much of a beach bum as I had time to be. I loved to swim, and I was doubly blessed because we also had some terrific lakes in the area. One of my favorite things was to get on my bike and ride to the best lake, take a swim, and ride back. It was a 46-mile round-trip (Dr. Herbert A. deVries, personal communication, December 2001).

His passion and capacity for exercise and fitness led him in his middle teens to weight training, which was a form of training that was rare in this country. Even at this age his powerful and analytical mind, for which he would in time become justifiably renowned, was struck by the dissonance between what he read in Bob Hoffman's *Strength & Health* magazine and what he heard from the coaches and physical education teachers in his area. He wondered how there could be such a disagreement. Deciding to experiment with the weights and how they might affect him, he came quickly to the conclusion that all the talk about muscle-bound lifters was based on hearsay and not on actual evidence.

It didn't take long for me to tell that weight training really worked. I got stronger and my muscle mass increased, and I still felt just as quick and athletic as before—and faster in the water, too. It was that experience more than anything else that set my life on the course I followed from then on. I decided to test things out for myself as a way of getting to the truth. Hoffman's articles about the importance of weight training to athletes in all sports made sense to me, especially after I'd done some lifting myself, and I became one of his disciples even though I was in a very small minority back in the middle '30s (Dr. Herbert A. deVries, personal communication, December 2001).

Herb deVries became something of a pioneer. Apparently this role suited him, for he went on to blaze many trails in the field of exercise science. He continued to train with weights and his aquatics, and this training paid off in the lean times; he began to earn some, and then all, of his income as an instructor in swimming and diving. According to the vita he provides in his 1946 master's thesis, he ''spent every summer from 1934 through 1945 engaged in teaching swimming and diving or in the operation of a swimming pool . . . [and] also spent two winter seasons teaching swimming and diving at resort hotels in Miami Beach, Florida'' (1).

Eye problems kept deVries out of the military service in the early years of World War II, however, in 1943 he began what would become 33 months of active duty as an officer with the Army Air Corps. His time was split between instructing recruits in physical training and serving as a navigator. He was stationed for a while in central Texas and began his graduate work in Austin under D.K. Brace at the University of Texas. He had always been drawn to the sciences, and his intention was to enroll in medical school following his master's degree work. ''I really loved central Texas, and Austin in particular, and I'd have stayed if there'd been a medical school there,'' he said. ''But I didn't like Galveston, so I applied to the University of Southern California Medical School and was accepted there.'' By that time he was supporting his wife and 3 children. As his second year of medical school was ending, his wife became very ill, and he was forced to drop out and take care of her and their family. ''As it happened, I'd managed to get all my basic science courses in, and by then I'd decided that I preferred research to clinical work. So although our finances were such that I had to leave, things worked out in the end'' (Dr. Herbert A. deVries, personal communication, December 2001).

To put food on the table, deVries fell back on his old standby—swimming—and began to develop, and work full time at, the Long Beach Swim Club. He ran this club successfully for more than 10 years. In 1957 he accepted a position as a professor at California State University at Long Beach (Cal State). He taught there until 1965, and during that time he began and com-

pleted work on a PhD at the University of Southern California (USC). Also while at Cal State he did the research for and wrote his influential textbook on exercise physiology, *Physiology of Exercise*, for William C. Brown Publishers (2). He says that he wrote the book because he badly needed one for the classes he was teaching. Also, he wanted it focused on exercise physiology and filled with up-to-date information on this growing field. In order to have the time he needed to thoroughly research the book, he cut his workload in half at Cal State (and took the necessary pay cut) for 3 years. The result is generally considered by sports scientists to have been the gold standard when it was published in 1966 and for many years after, as 4 more editions (always significantly updated) were published by William C. Brown Publishers (4, 7, 9, 10).

In 1964 deVries sold the Long Beach Swim Club and turned the full power of his beautiful mind to academic research. He joined the faculty at USC in 1965 and began to generate important work at an even greater pace. He had moved to Laguna Beach in 1960 and still lives in the same house. He loved the beaches there when he first arrived in California in the summer of 1946 and began to surf, and his love has been constant. In fact, for almost 50 years he surfed frequently and year-round, using surfing as his main form of exercise. During most of those years he rode the heavy boards that were being used at the time—big, thick boards weighing between 75 and 100 pounds. And in the winter, when the water temperature stayed in the middle to low 50s, he didn't use a wetsuit.

> We had quite a few guys go out in the warmer weather, but when the days and the water began to cool down the numbers really dropped off. I'd have to say that in those early, pre–wet-suit days some of the men who surfed just couldn't bear the cold physiologically. They'd go in and then come out with their teeth chattering and their skin a light shade of blue. I was one of the lucky ones who'd be a deep red over my whole body when I came out. For me, it was the most invigorating feeling in the world (Dr. Herbert A. deVries, personal communication, December 2001).

He quit only when he had to; his dermatologist, who was worried about all the sun-related skin lesions to which deVries was subject, told him he had to stop.

But the same drive that led him to the virtually deserted beaches at San Onofre and Laguna Beach all those blustery winter days helped him conceive and carry out the many research studies that have produced and maintained his reputation. Many of the journal articles that flowed out of his lab were significant; it is difficult to cite only a few. However, when Bill Kraemer, a professor at the University of Connecticut, was asked to rank deVries' contributions, he said, without hesitation, ''the aging process.'' Kraemer says

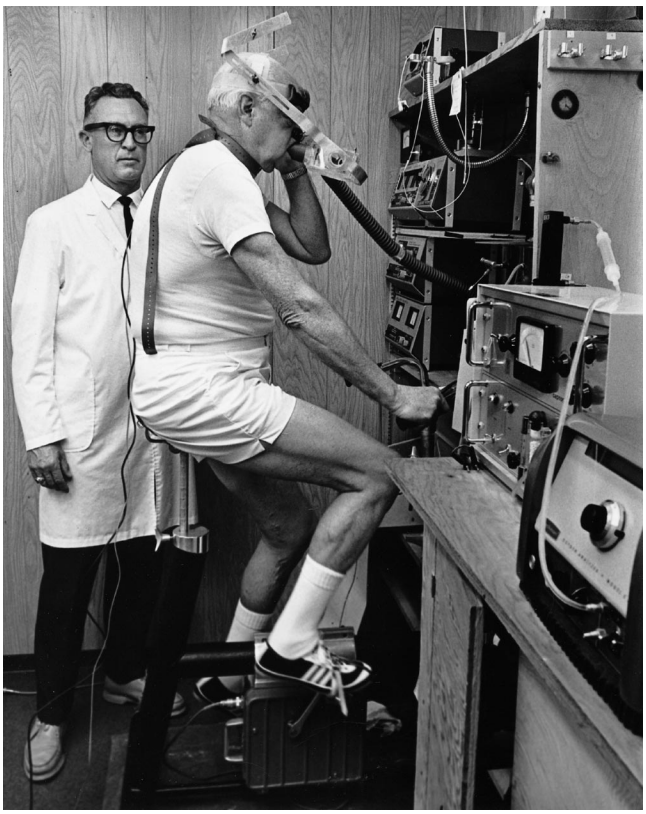

Figure 1. Dr. Herb deVries testing subject Ray Halderman (deceased) in the mobile Physiology of Exercise Lab at Leisure World in Laguna Hills, CA, circa 1968.

> deVries was the first sports scientist to look so systematically at the physiological process of aging. He examined key aspects of the age-related loss of the physical components of youth and fitness, and he offered exercise and lifestyle prescriptions to help offset those losses. And he did it for women as well as for men. And he always put strength high on the list (Dr. William Kraemer, personal communication, December 2001).

Herbert deVries is proud of his work in the field of gerontology, and he reminds us that

> less than a half century ago most physiologists believed that if a person hadn't maintained a high level of fitness it was virtually impossible to achieve such a level or even—and this is critical to the thinking then—to make any sort of physiological improvements in such basic areas as strength and cardiovascular function (Dr. Herbert A. deVries, personal communication, December 2001).

He labored to change the way doctors and physiologists viewed the aging process, and over time his work has had, and continues to have, a telling effect. In *Fitness After Fifty*, which he wrote almost 40 years ago, and with support from both USC and the U.S. Administration on Aging, he set out

> to design a safe, effective scientific fitness program for older people. The site we chose was the Leisure World retirement community in Laguna Hills, California. More than 200 men and women, aged 56–87, participated voluntarily in the re-

search program over 5 years. Each underwent a thorough physical examination to confirm basic good health, but there were no prerequisites for fitness . . . . The fitness program combined a walk-jog routine, calisthenics, and static stretching in hour-long workouts 3–5 times a week. We tested the volunteers' responses to exercise before, during, and after the sessions. Six weeks after the program started, we began to see dramatic changes in the participants. Their blood pressure readings dropped. The percentage of body fat decreased. Maximum oxygen capacity increased. Arm strength improved. Electrical activity in the muscles, a sign of nervous tension, diminished. Most of the volunteers continued to improve, though at a slower rate, for 18–42 weeks . . . . Regular exercise quite literally turned back the clock for our volunteers (8) (Figure 1).

This popular account of the many research articles he produced to support his conclusions on the malleability of the aging process reveal why, in 1996, the Council on Aging and Adult Development (CAAD) within the American Association for Active Lifestyles and Fitness of the American Alliance for Health, Physical Education, Recreation, and Dance named the CAAD Research Award the ''Herbert A. deVries Award.'' This account also helps to provide the basis on which he was elected to a Fellowship in the American Academy of Physical Education. Kraemer argues that the work deVries did in using electromyography to help clarify the interface between hypertrophy and neuromuscular controls was a major contribution to the field, and Kraemer also says that the article deVries and his student, Toshio Moritani, published in 1979 in the *American Journal of Physical Medicine* has been one of the most often-cited articles ever published in the field (13). Once again, deVries concedes that this particular line of research was significant. Before that research project, he notes, no one had been able to determine what percentage of a strength gain resulted from hypertrophy and what resulted from learning. ''We were the first to use relatively sophisticated equipment to precisely measure what percent of a strength gain came from muscle hypertrophy and what percent came from learning the task,'' he says, adding that Moritani, now a senior professor in Japan, was ''the most brilliant student I ever had'' (Dr. Herbert A deVries, personal communication, December 2001).

Brilliance is a word often overused in common speech, but it seems that everyone consistently uses it when describing deVries and his wide-ranging contributions and interests. For example, Terry Housh, from the University of Nebraska, who has coauthored a number of articles with deVries (the most recent one was published in 2000 in the *European Journal of Applied Physiology and Occupational Physiology* [12]), says that of the scores of scientists with whom he has worked in his long career, ''Herb is the smartest person I know, and I've known some very smart people in this field and related ones'' (Dr. Terry Housh, personal communication, November 2001).

Figure 2. Dr. Herbert A. deVries receiving the Silver Anniversary Award from the President's Council on Physical Fitness in Washington, DC, in 1981.

DeVries himself is particularly pleased with a research project he devised about 30 years ago that for the first time allowed scientists to measure with precision the tranquilizing effects of exercise. ''Before our study,'' he explains, ''it was always, 'I feel 100% better,' or, 'I feel much more relaxed after I exercise.' I was happy that we were able to show that as little as 15 minutes of exercise had a specific, measurable calming effect. That satisfied'' (Dr. Herbert A. deVries, personal communication, December 2001).

By all accounts, deVries should be a satisfied man. His above-mentioned coauthored study in the *European Journal of Applied Physiology and Occupational Physiology* is his 68th publication in a refereed journal. In addition, he has published 9 books (2–10) with a 10th one, *Applied Exercise and Sport Physiology*, due out in the summer of 2002 (11). He also has chapters in 21 other books and has published in such magazines as *Medicine and Science and Sports* and *The Physician and Sports Medicine.* He has also served as Associate Editor for both the *Research Quarterly* (American Association for Health, Physical Education, and Recreation) and as Associate Editor of *Medicine and Science and Sports* (American College of Sports Medicine). As a consultant, he has done work for the National Aeronautics and Space Administration's Manned Spacecraft Center; Health, Education, and Welfare; the President's Council on Fitness Programs for the Elderly (Figure 2); the American Association for Retired Persons; the Young Men's Christian Association; and the Department of Physical Medicine at the Federal University of Rio de Janeiro, Brazil. He chaired 15 dissertation committees at USC and served on dozens more.

These days deVries spends his time keeping up with the field and taking on the occasional consulting or research project. He stays active physically with

regular walking up the steep hills in his hometown, calisthenics, and stretching. About a year ago he had to give up flying, which was one of the great loves of his life, because he had begun to notice a loss of depth perception. He became a licensed pilot just after WWII and since that time has registered approximately 5,000 hours of flight time. In later years he converted to soaring and flying high-performance sailplanes. He's also a car buff and has owned more than 50 cars—many were quite sporty—during his long life. Even now, according to his friend and colleague, Terry Housh, ''Herb loves speed, and he has a heavy foot and the tickets to prove it'' (Dr. Terry Housh, personal communication, December 2001).

What a life, and what a man. Still vigorous at the age of 84 and productive in exercise science, which is the field where he made such colossal contributions over the past half century, he gives little indication that he will do what Dylan Thomas warned us against and ''go gentle into that good night.''

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