



## CELEBRATE SUCCESS!

# Standing on the Shoulders of Giants: Celebrating the Success of Cooper Aerobics

by Dixie Stanforth, Ph.D., FACSM and Jennifer Van Overdam, M.Ed., CHES

## 50+ YEARS OF EXCELLENCE

Most of us in the fitness world cannot remember a day without the term “aerobics” as part of our vocabulary. Did you know that Kenneth H. Cooper, M.D., MPH, coined the term in 1968 when he published his book *Aerobics* (1), or that his official definition was accepted to appear in the Oxford English Dictionary in 1986? Dr. Cooper’s book *Aerobics* has been translated into 41 languages and Braille, and he has authored 18 additional books, which combined have sold more than 30 million copies. Dr. Cooper and son, Tyler Cooper, M.D., MPH, released their first-ever book as a father/son team, *Start Strong, Finish Strong* (2), in 2007. The “aerobics” story is a fascinating one, representing more than 50 years of exceptional service and effectively bridging the gap between faddism and scientific legitimacy in using exercise in the practice of diagnostic, preventive, and rehabilitative medicine. And the results are too impressive to be ignored.

Dr. Cooper’s journey into exercise science and wellness began with his time in the U.S. Army and U.S. Air Force, serving 13 years as a flight surgeon and director of the Aerospace Medical Laboratory in San Antonio, Texas, at the height of the “space race.” Although his dream was to become an astronaut, his professional journey led him to develop their training programs, preparing them for space travel and preventing deconditioning while on board. During that time period, he also developed assessments, including the 12-minute and the 1.5-mile fitness tests, both still used worldwide today by public schools and universities, athletic teams, and military and law enforcement agencies (Photo 1).

Dr. Cooper resigned from the military in 1970 to practice preventive medicine and to explore the little understood relationship between cardiovascular fitness and longevity, a powerful connection we tend to take for granted today. Cooper Clinic began in Dallas as a two-room office with two employees: a secretary and another physician. In 1971, Dr. Cooper purchased the 8-acre Nichols mansion. This facility became known as The Aerobics Center, now known as Cooper Aerobics Center. Over the past five decades, this two-employee business has evolved into a health and wellness company situated on 30 acres with a staff of nearly 450 — including a preventive medicine clinic, a concierge medical practice, a nonprofit research institute, a boutique hotel and conference center, a luxury day spa, a renowned fitness center, vitamins and supplements line, and

corporate wellness programming. As Dr. Cooper explains, “If you provide a service and get the results your customer wants, it will make you successful in any business. About 54% of our patients are corporate sponsors, and 74% are return patients giving us a database of 116,000 people and more than 250,000 stress tests for 330,000 visits and 50 years of data. We follow up on our patients, and we have published more than 700 papers at The Cooper Institute proving “Exercise is Medicine.” Recently published in *Harvard Magazine* (3) was the statement,

**Photo 1.** Dr. Cooper joined the military in 1957. During his 13 years of service in the U.S. Army and U.S. Air Force, he served as a flight surgeon and director of the Aerospace Medical Laboratory in San Antonio, Texas. Photo courtesy of Cooper Aerobics.



Downloaded from <http://journals.hww.com/acsm-healthfitness> by Vaidh V06-CE-ES3-q4193G0AN7ZM1BLZU7M1AB10DKR0D00BR1GJDM1BZ7N1N1C0U1gR1em10Cq1PL1C0em1K13C01-91M1GM101B10q1R16AZ1L1R1S1K101J1e on 03/01/2021

## CELEBRATE SUCCESS!

“One of the most venerable long-term studies on how exercise affects aging is the Cooper Center Longitudinal Study in Dallas, Texas, started in 1970 by the man who coined the term ‘aerobics,’ Dr. Kenneth Cooper.” Hear Dr. Cooper talk about some of the reasons for his success here (SDC Video 1, <http://links.lww.com/FIT/A164>) (Photo 2).

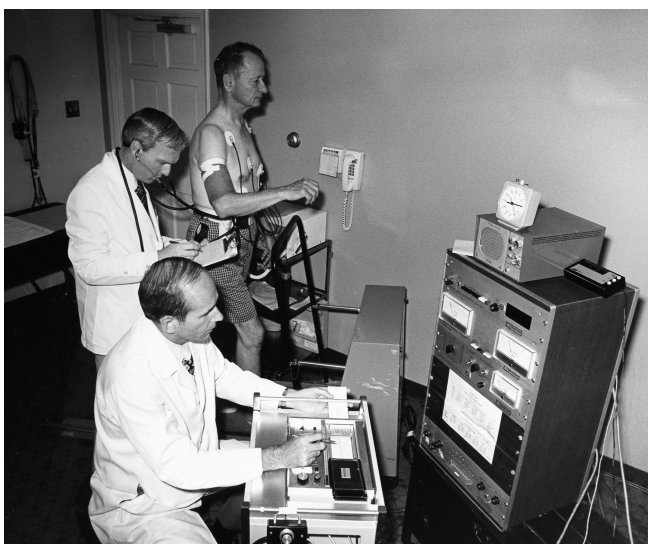
### EXERCISE IS MEDICINE: PREVENTION RATHER THAN TREATMENT

When Cooper Clinic opened its doors, Dr. Cooper’s approach to medicine was prescient, advocating a movement away from disease management to disease prevention long before there was a fitness industry to help deliver the message. He explains what he calls The Cooper philosophy: “It is easier to maintain good health through proper exercise, diet, and emotional balance than to regain it once it is lost.” Dr. Cooper and his team of prolific researchers have been instrumental in demonstrating the power of prevention and positive impact of fitness on health and wellness. See video clip of Dr. Cooper talking about the importance of lifestyle and preventative medicine here (SDC Video 2, <http://links.lww.com/FIT/A165>).

The tipping point for the integration of exercise with medicine was The Cooper Institute’s article published in the *Journal of the American Medical Association (JAMA)* in 1989 (4), which has been heralded by the American Heart Association as “the landmark study of the century.” As Dr. Cooper explains,

“That article broke the barrier of using exercise in the practice of medicine because prior to the article being published in

**Photo 2.** Dr. Cooper was the first to bring treadmill stress testing to Dallas, a new concept in medicine at the start of the 1970s. The maximal performance treadmill stress test is a signature test of a Cooper Clinic comprehensive exam to help predict future signs of heart disease. Photo courtesy of Cooper Aerobics.



*JAMA*, physicians did not encourage vigorous exercise, particularly after 40 years of age. They thought it could be life-threatening. When *Aerobics* was published in 1968, I saw titles in medical newspaper articles that said, ‘The streets are going to be full of dead joggers as more Americans follow Cooper.’ But from 1968 to 1990, deaths from heart disease dropped 48% in the United States. Only three countries — Canada, Australia, and New Zealand — saw a comparable decrease. Nearly all other countries in the world had a sustained increase. And only one-third of that decrease in deaths from heart disease could be related to moderate technology, two-thirds was due to lifestyle changes.”

It is no surprise talking with Dr. Cooper involves data and statistics: he feels strongly that every person engaged in any part of allied health should know and promote the fact there is no drug that can replicate the benefits of an active lifestyle. He is able to share this information in an engaging and convincing manner, highlighting much of the research-based information his clinic and research institute have been instrumental in gathering and sharing. A few of the basics he highlights as key messages include the following:

- The most underappreciated risk factor for physical and mental health known to man is lifestyle.
- More than 76% of diseases are preventable; more than 45% of cancers are preventable.
- About two in three people are overweight (Centers for Disease Control and Prevention). Lifestyle changes such as limiting alcohol, quitting smoking, controlling weight, and exercising regularly can possibly prevent up to 60% of cancers.

Dr. Cooper elaborates on the power of exercise to both improve and extend quality of life:

“We can prove that even minimal activity can provide great results for both men and women. In a study from The Cooper Institute published in *JAMA* (4), we measured fitness by time on a maximal performance treadmill stress test and divided the participants into the following quintiles: Very poor, poor, fair, good, excellent, and superior, all age and sex adjusted. A total of 3,500 women and 10,100 men in this study were followed for a period of 8.6 years. During that time, if they were to move up only one category on the fitness scale, that is, from very poor to poor, they were able to reduce deaths from all causes (heart attacks, strokes, diabetes, and deaths from cancer) by 58%, and we projected an increase in life expectancy of up to 6 years. However, if they reached the excellent or superior category of fitness, they decreased death from all causes by 65% and life expectancy by 9 years. So, the best return on your fitness investments is not moving from the very poor to excellent category of fitness, it is from very poor to poor. The important point is to avoid inactivity!”

### Get Cooperized™

Today Dr. Cooper is revolutionizing health and fitness again — calling on America and the world to Get Cooperized™. As a



leading pioneer of preventive medicine, Dr. Cooper challenges everyone to follow these “8 Healthy Steps” to live better both sooner and later: maintain a healthy weight, make healthy food choices most of the time, exercise most days of the week, take the right supplements for you, do not use tobacco, control alcohol, manage stress, and get a regular, comprehensive physical exam. Since the publication of *Aerobics*, The Cooper Institute has tried to make their recommendations safe, effective, and beneficial from a cardiovascular and respiratory standpoint to promote health and longevity. In 2009, drawing from their database of almost 96,000 men and women, they calculated that the life expectancy for women and men would be 90.3 and 87.5 years, respectively, if they followed the eight steps to Get Cooperized™ guidelines. That prediction was 10 years longer than the national average at the time, but there was some question as to whether reality would reflect the numbers. The answer became clear with the release of an article published on April 30, 2018, in the journal *Circulation* titled “Impact of Healthy Lifestyle Factors on Life Expectancies in the US Population,” from the Harvard School of Public Health (5). They followed 78,865 nurses and 44,354 health professionals for 34 years. The risk factors they considered were never smoking, healthy weight, regular physical activity, healthy diet, and moderate consumption of alcohol. If they had all these “good risk” factors, women’s life expectancy was 93.1 years and men’s 87.6 years. If they had none, the women’s life expectancy was 79 years and men’s 75.5 years, approximately the current average longevity of American men and women. Supported by independent research like this longitudinal study, the recommendation to Get Cooperized™ appears to offer a solid foundation for lifestyle recommendations appropriate for all clients and recommendations. Dr. Cooper summarizes, “I think we have good data now to show that proper exercise can be done without musculoskeletal problems, and with changes in lifestyle, deaths from all causes will decrease and lives will be extended” (Photo 3).

Dr. Cooper’s aerobics fitness revolution is a movement not only in the United States but also abroad, and Dr. Cooper has lectured in more than 50 countries. He is most famous in Brazil for having trained the 1970 Brazilian soccer team to a World Cup victory. As a result, jogging is translated as “coopering” in Portuguese. In Hungary, the “Cooperteszt” is the name of the national fitness test. The Cooper Institute signed a partnership agreement with the Hungarian School Sport Federation to establish a national platform for youth fitness assessment in Hungary. The new fitness test, NETFit, modeled after FitnessGram®, was administered to all school-aged children in Hungary (approximately 934,000 in 2,500 schools) in 2015. Dr. Cooper also was honored in 2015 as an inductee into the National Football Foundation Leadership Hall of Fame for his remarkable leadership skills, ability to inspire others, and influence in the football community with groundbreaking research and preventive medicine teachings. The Cooper Institute has partnered with NFL Charities PLAY 60 initiative to bring the FitnessGram® to students in more than 1,000 schools nationwide

**Photo 3.** Dr. Cooper has lectured in more than 50 countries and is most famous in Brazil for having trained the 1970 Brazilian soccer team to a World Cup victory. As a result, jogging is translated as “coopering” in Portuguese. Photo courtesy of Cooper Aerobics.



in the participatory program over the last 10 years; there are currently more than 500 schools in a research-based restructured NFL Play 60 FitnessGram® program addressing physical activity, nutrition, and wellness. They also have created the Healthy Zone School program and established The Perot International Youth Data Repository containing health-related data from children worldwide. Dr. Cooper’s extensive media interviews, professional presentations, and talks with the general public span his entire career and reflect the passion he has for sharing his life’s work.

### STILL ON THE CUTTING EDGE OF MEDICINE AND HEALTH

At nearly 90 years of age, Dr. Cooper continues to see patients, and Cooper Aerobics stays at the forefront of research, publishing more than 700 papers from their data over the years (Photo 4). Although it is no surprise that much of their research centers on cardiovascular health, Dr. Cooper’s interest in inflammatory processes and the increasing evidence for the connection to a variety of disease conditions, including Alzheimer’s, diabetes, depression, cancer, etc., has broadened their focus. In addition, Dr. Cooper has been on the forefront of questioning the role of vitamin D and inflammation in recent years, a topic that has gained heightened interest in the midst of the COVID-19 pandemic. In his *Dallas Morning News* op ed piece (6) from October, Dr. Cooper mentions a recent study published in *JAMA Open Network* (7), indicating vitamin D deficiency increases a person’s risk of COVID-19 by 77%, compared to those with sufficient levels of the nutrient (deficiency is less than 20 ng/mL). He suggests it is a simple, safe, and inexpensive way to suppress an overresponsive immune system called a cytokine storm. Dr. Cooper is also known

## CELEBRATE SUCCESS!

**Photo 4.** At nearly 90 years of age, Dr. Cooper continues to see patients and Cooper Aerobics stays at the forefront of research, publishing more than 700 papers from their data over the years. Photo courtesy of Cooper Aerobics.



for saying, “It is more beneficial and cost-effective to prevent disease than it is to find a cure,” and he recommends everyone monitor vitamin D levels as it reduces inflammation, risk of heart disease, autoimmunity, and cancer cell growth while improving brain function, mood, sleep, and immune response. See Sidebar 1 for a list of sample references reflecting both the power and scope of this ongoing research stream.

### PRACTICE WHAT YOU PREACH: DISCIPLINE AND GROWTH

Dr. Cooper’s work with the Air Force and NASA launched his *Aerobics* life work, but it was his own health crisis that made it personal. While water skiing at age 29, Dr. Cooper thought he was having a heart attack. At the hospital, his doctor told him he was simply out of shape, having gained 40 lbs and becoming inactive due to the stress of medical school. That firsthand experience catapulted the young doctor to lose weight and run his first marathon, the Boston Marathon, 1 year later. That disciplined response has continued for decades, affecting both his personal and professional growth (Photo 5).

“Being a physician and having practiced medicine continuously in the military and in private practice for 64 years, I have found that the key to success in life, whether it is professional, spiritual, academic, or athletically, is discipline. Some people ask me what is my key to success over the years. I say that it is probably discipline. And most people who work for me in Dallas know I am usually the first physician in the office to arrive in the morning and the last one to leave at night, so I try to practice what I preach. As a result, I am still working out regularly. I

### SIDEBAR 1: Top 10 Articles from Cooper Institute

1. Cooper KH, Pollock ML, Martin RP, White SR, Linnerud AC, Jackson A. Physical fitness levels vs selected coronary risk factors. A cross-sectional study. *JAMA*. 1976;236(2):166–9.
2. Blair SN, Kohl HW, 3rd, Paffenbarger RS, Jr., Clark DG, Cooper KH, Gibbons LW. Physical fitness and all-cause mortality. A prospective study of healthy men and women. *JAMA*. 1989;262(17):2395–401.
3. Blair SN, Kohl HW, 3rd, Barlow CE, Paffenbarger RS, Jr., Gibbons LW, Macera CA. Changes in physical fitness and all-cause mortality. A prospective study of healthy and unhealthy men. *JAMA*. 1995;273(14):1093–8.
4. Blair SN, Kampert JB, Kohl HW, 3rd, et al. Influences of cardiorespiratory fitness and other precursors on cardiovascular disease and all-cause mortality in men and women. *JAMA*. 1996;276(3):205–10.
5. Berry JD, Willis B, Gupta S, et al. Lifetime risks for cardiovascular disease mortality by cardiorespiratory fitness levels measured at ages 45, 55, and 65 years in men. The Cooper Center Longitudinal Study. *J Am Coll Cardiol*. 2011;57(15):1604–10.
6. Willis BL, Gao A, Leonard D, DeFina LF, Berry JD. Midlife fitness and the development of chronic conditions in later life. *Arch Intern Med*. 2012;172(17):1333–40.
7. DeFina LF, Willis BL, Radford NB, et al. The association between midlife cardiorespiratory fitness levels and later-life dementia: a cohort study. *Ann Intern Med*. 2013;158(3):162–8.
8. Radford NB, DeFina LF, Leonard D, et al. Cardiorespiratory fitness, coronary artery calcium, and cardiovascular disease events in a cohort of generally healthy middle-age men: results from the Cooper Center Longitudinal Study. *Circulation*. 2018;137(18):1888–95.
9. Willis BL, Leonard D, Barlow CE, Martin SB, DeFina LF, Trivedi MH. Association of midlife cardiorespiratory fitness with incident depression and cardiovascular death after depression in later life. *JAMA Psychiatry*. 2018;75(9):911–7.
10. DeFina LF, Radford NB, Barlow CE, et al. Association of all-cause and cardiovascular mortality with high levels of physical activity and concurrent coronary artery calcification. *JAMA Cardiol*. 2019;4(2):174–81.

exercise on a stationary bicycle 30 mins, 4 to 5 days a week. I walk the dogs each night for 30 minutes and I walk longer on the weekends. I also have a light weight-training program I use 3 to 4 days per week since you need to incorporate more weight training along with aerobic activity, particularly as you age.” Hear Dr. Cooper talk about the importance of discipline here (SDC Video 3, <http://links.lww.com/FIT/A166>).

Dr. Cooper recognizes that while he is known as the “face” of Cooper Aerobics, clients continue to come back due to the professional care and knowledge of their staff as he notes, “We have a fantastic staff. Any CEO will be as successful as his staff makes him. Our staff is highly qualified, and our clients are equally as concerned about how much we care as about how much we know. That care and concern is what keeps them coming back. We’ve really promoted the concept of customer service that’s been lost in medicine and in gyms. It’s extremely important to us. That’s the key to success — the relationship you have with your clients and patients.”

The personal and professional relationships have developed and deepened over decades, and there is an incredible legacy within the field of exercise science of those who have been a part of the Cooper story (see Sidebar 2). Life has not been all steady state since they first acquired the property in 1970. They survived a fire in 1981 that destroyed the fitness center and were threatened with the risk of bankruptcy between 1988 and 1991. Dr. Cooper attributes much of his resilience during difficult times to his faith, saying, “Many, many times over the last 50 years when I needed to make a decision, I was going to go one way, but I ended up going the other way. I’m convinced

## SIDEBAR 2: Cooper Legacy

- Charles L. Sterling, Ed.D.
- William L. Haskell, Ph.D., FACSM
- Michael L. Pollock, Ph.D.
- Steven N. Blair, PED, FACSM
- Lieutenant General Richard L. Bohannon, M.D.
- Tedd L. Mitchell, M.D., FACSM
- Fred Meyer
- Tyler Cooper, M.D., MPH
- Bruno Balke, M.D. (Dr. Cooper trained under him while in the U.S. Air Force in the 1960s)
- Ralph S. Paffenbarger, Jr., M.D., Dr.PH., D.Sc., FACSM (a mentor to Dr. Cooper)

the Lord was guiding me all along the way.” He attributes the ability to listen and willingness to change to much of their ongoing success, including a recent expansion and complete renovation and upgrade of their fitness center, hotel, and Cooper Clinic.

When asked about the ability to keep a business thriving for more than 50 years, Dr. Cooper remains both humble and pragmatic. He concludes,

“If people have a need, and you provide the results they are looking for, they will make the assessment. We get results with our patients. About 76% of diseases in America today are a result of

**Photo 5.** In July of 1964, while in the U.S. Air Force, Dr. Cooper works with NASA, setting the platform to launch his aerobics life work. Photo courtesy of Cooper Aerobics.





## CELEBRATE SUCCESS!

our lifestyle. It's well-documented: it's not our heredity; it's our lifestyle. So, we concentrate on lifestyle changes, and we are probably as successful as any group in the world at getting the results we want: losing weight, quitting smoking, getting in shape, controlling alcohol, all the things we recommend to Get Cooperized™.”

We celebrate the success of Cooper Aerobics and their more than five decades of excellent service to our field. Generations of us have stood on his shoulders to see further, and much of the growth in our field is attributed to his influence. Dr. Cooper's story will be told in a full-length documentary airing in 2021. We will provide additional information as it becomes available.

1. Cooper KH. *Aerobics*. Philadelphia (PA): Lippincott; 1968, 253 p.
2. Cooper KH, Cooper TC. *Start Strong, Finish Strong*. New York (NY): Avery Publishing; 2007. 432 p.
3. Lieberman DE. Active grandparenting, costly repair. *Harvard Magazine*. 2020. Available from: [harvardmagazine.com/2020/09/features-active-grandparenting](https://www.harvardmagazine.com/2020/09/features-active-grandparenting).
4. Blair SN, Kohl HW 3rd, Paffenbarger RS Jr., Clark DG, Cooper KH, Gibbons LW. Physical fitness and all-cause mortality. A prospective study of healthy men and women. *JAMA*. 1989;262(17):2395-401.
5. Li Y, Pan A, Wang DD, et al. Impact of healthy lifestyle factors in the US population. *Circulation*. 2018;138(4):345-55.
6. Cooper KH. Dr. Kenneth Cooper: vitamin D supplements can help avoid COVID-19 infection. *The Dallas Morning News*. Available from: <https://www.dallasnews.com/opinion/commentary/2020/10/08/dr-kenneth-cooper-vitamin-d-supplements-can-help-avoid-covid-infection/>.
7. Meltzer DO, Best TJ, Zhang H, Vokes T, Arora V, Solway J. Association of vitamin D status and other clinical characteristics with COVID-19 test results. *JAMA Netw Open*. 2020;3(9):e2019772.



**Dixie Stanforth, Ph.D., FACS**, is a professor of instruction in the Department of Kinesiology and Health Education at The University of Texas at Austin. She developed and directs the Health Fitness Instructor, Community Health and Wellness, and Medical Fitness/Rehabilitation Specializations for undergraduates. She serves as an associate editor for ACSM's Health & Fitness Journal® and is a frequent presenter at ACSM's International Health & Fitness Summit and other national conferences.



**Jennifer Van Overdam, M.Ed., CHES**, completed undergraduate and graduate work in the Department of Kinesiology and Health Education at The University of Texas at Austin. Her teaching experience focused on the basics of exercise programming and developing the communication skills needed in personal and group training. She works as a personal trainer and group fitness instructor at both private and corporate sites and as a program coordinator at the Center for Health Communication at UT Austin.