An Interview With Our Journal’s Founder, Professor Mel Williams

Louise M. Burke

You have had an incredible career in sports science and sports nutrition spanning 40 years of research, teaching, mentoring, and writing. Can you tell me what first made you interested in this field?

My interest in exercise science and sports nutrition appears to have been developed at a subconscious level, involving the interaction of many factors during my youth, including years of sports involvement and medical/science education in high school, the military, and college.

I was born and raised in a small multiethnic town in the anthracite coal region of northeastern Pennsylvania where sports was king, especially American football and wrestling. I participated in both sports in high school, and as a rather scrawny kid tried to gain body weight and muscle for football but lose weight for wrestling. Although weight lifting for sports was contraindicated by some coaches at the time (thinking athletes would become muscle-bound and lose coordination), at age 15 I bought a Charles Atlas manual on muscle building through weight lifting. I recall lifting weights clandestinely, followed by consumption of a liter of a whole milk/ice cream/banana concoction. That was the 1950s version of nutrient timing to gain muscle mass. On the other hand, various weight-loss protocols were used during wrestling season. Additionally, consumption of a tea/honey mixture was traditional before wrestling matches, one of my first experiences with a purported nutritional ergogenic aid.

While in high school (1950–55), my favorite class was physical education. My teacher was a graduate of Springfield College and instructed us in a comprehensive array of physical activities, not only traditional major sports but also others such as gymnastics and soccer that were not very common at that time. Following high school I enlisted in the U.S. Army paratroopers (1955–58) and was assigned to the medical corps, where various medical courses provided a solid background in anatomy, physiology, and emergency medical care. I also completed a 6-month hospital internship to serve as a medical laboratory technician and in a position comparable to a modern-day physician’s assistant. One of my roles was to serve as the medical assistant to several sports teams, including the boxing team, in the 11th Airborne Division. Being stationed in Germany for most of my service time, one benefit was the opportunity for travel throughout Europe and subsequent development of a love for international travel. At age 18 it was quite a thrill to visit Paris and ski the Alps.

After my military service and based on my high school experiences, I enrolled in East Stroudsburg State Teachers College (1958–62) to pursue a career in teaching health and physical education and coaching. Although a small college, the curriculum at ESSTC was outstanding, providing not only extensive coursework in a wide variety of sport and physical education activities but also a comprehensive coverage of the arts and sciences. I participated in both football and wrestling for 4 years and again practiced various methods of weight control for each sport, bulking up to about 82 kg for football and paring down to about 67 kg for wrestling. My favorite course was exercise physiology; my teacher, Dr. Frank Sills, was actively involved during the formative years of the American College of Sports Medicine and also was one of my sponsors for ACSM fellow status years later.

After graduating from ESSTC, I earned my Master of Education degree in physical education at Ohio University (1962–63), where I was assistant coach to the wrestling team. I also taught physical education courses and thoroughly enjoyed working with college-age students. Following graduation, I taught high school health and physical education for 2 years (1963–65) in Reading, PA, and also was an assistant coach for both football and wrestling.

My experience at Ohio University motivated me to pursue a career as a college professor and coach, and thus I enrolled in the doctoral program at the University of Maryland. An instructor position became available, and I served as a full-time faculty member while pursuing my doctorate. The doctoral program was evolving and adding more faculty members with backgrounds in physiology, biomechanics, and sports psychology. I was fortunate to have as my advisor and mentor Dr. David H. Clarke, son of Harrison Clark, one of the most notable physical education researchers in the United States at that time. Along with other outstanding faculty members, Dr. Clarke developed a broad-based curriculum exposing doctoral students to a wide variety of exercise-science
courses, complemented by courses selected throughout the university, such as biochemistry and statistics. In the 1960s, it was one of the first Exercise Science curriculums in the country. Dr. Clarke also established a comprehensive exercise physiology laboratory, which ignited my interest in research, particularly research involving performance enhancement in sport. Dr. Clarke was my dissertation advisor.

I have chosen a few highlights from your achievements for special comment. The first has to be your role as the founding editor of the International Journal of Sport Nutrition (as it was called in those days). Can you tell me about how the impetus for the journal was achieved and what it was like in the first years?

Rainer Martens, a scholar and university professor, founded Human Kinetics to publish scholarly textbooks in physical education and the exercise sciences and later added scientific journals to its offerings. I had edited and written books with Human Kinetics, and Rainer approached me in 1989 about the possibility of developing a journal focusing on exercise physiology and sport nutrition. After some deliberation, we agreed the journal should focus on sport nutrition alone and also have an international flavor. Thus, the International Journal of Sport Nutrition was conceived.

To help jump-start the journal, Human Kinetics sponsored a conference in Orlando, FL, in 1990. Renowned experts in various areas of sports nutrition were invited to present papers at the conference, with the understanding that a corresponding manuscript would be submitted. At that time, the journal was published quarterly, so this provided us with several excellent manuscripts for each issue during its first year of publication, 1991.

IJSN had an excellent editorial board, very representative of the international thrust of the journal. Editorial board members were encouraged to submit and recruit manuscripts, and several did so with enthusiasm. As editor, I also solicited reviews by internationally recognized sports scientists and would recruit manuscripts at various conferences, such as the annual meetings of the American College of Sports Medicine and the Federation of American Societies for Experimental Biology, where abstracts involving sports nutrition research were often presented.

As a new journal in an array of exercise-science-related journals, we had not accrued a high journal impact factor and thus were not among the first choices for publication by sport nutrition scientists. Nevertheless, during its developing years the journal did publish a number of excellent manuscripts by renowned exercise scientists. It was a pleasure to serve as the founding editor and help launch this new journal, but the manifold contributions of the international editorial board were most important to its success during these initial years.

What would you like to see the journal doing in the future? Do you have any advice for the current editors, editorial board, and authors?

Successive editors of the journal (Priscilla Clarkson, Emily Haymes, Ron Maughan, and you) have enhanced the quality and quantity of published manuscripts and have added new features. Adding the term exercise metabolism to the journal title has broadened its scope to attract manuscripts that also have a close relationship to the overall thrust of sports nutrition. IJSNEM appears to have attracted more manuscript submissions from around the world, increasing its international thrust.

Publishing high-quality experimental studies is still a high priority of the journal. However, given the vast number of such studies being published today, one recommendation might be to solicit more review manuscripts. Such reviews may help provide a useful synthesis of research on a specific topic for the reader. For example, Melinda Manore and her associates in past years have published a number of excellent review articles in IJSNEM on vitamin supplementation and exercise/sport performance that provide a broad perspective to the reader.

Your special area of interest has been the effect of supplements on sports performance, and your own research activities have included studies on creatine, inosine, phosphate, and Eleutherococcus senticosus. What intrigued you about supplements for athletes? How have you seen the industry change and what do you think athletes and researchers should be doing to respond to this?

Based on my doctoral dissertation with alcohol, my initial research interests involved the effects of drugs and related ergogenics on physical performance, and several of our first research projects at Old Dominion University involved not only the potential ergogenic effects of alcohol but also those of amphetamines, caffeine, hypnosis, and the technique of blood doping. However, as noted above, such as the tea and honey use by wrestlers, dietary supplements have been available to athletes for a long time. As athletes in high school, we would read Scholastic Coach, a publication marketed to coaches and young athletes. I recall reading about wheat germ oil, then being touted as a wonder fuel for athletes. Other nutritional supplements such as vitamins and ginseng were also marketed to athletes, and most marketing claims were based on personal endorsements by athletes or low-quality research. When doing research for my doctoral dissertation on alcohol, I was exposed to a variety of articles involving the use of nutritional ergogenics and noted the absence of high-quality research. This motivated me to conduct research in this area.

The sports supplement industry today is a multibillion-dollar entity. Check out sport magazines targeted to specific athlete groups such as runners, cyclists, and triathletes. These magazines are replete with advertisements extolling the ergogenic virtues of specific supplements. The vast majority of sports supplements are supported not by a sound body of scientific evidence but, rather, by personal endorsements or improper extrapolations from scientific study. In the United States, most supplements
also contain the disclaimer, “This statement has not been evaluated by the FDA.” Athletes should be aware of the limitations associated with sports supplements. Some sport organizations, such as the Australian Institute of Sport and other national sport-governing bodies, do educate athletes on the use of dietary supplements, noting that although a few may be effective under certain sport conditions, most are not. There are some reputable companies marketing sports supplements, but many, particularly Internet-based operations, are not. As has been demonstrated repeatedly, some sport supplements contribute to a positive doping test, and some athletes have claimed this rationale for their being tested positive. Researchers need to evaluate the ergogenic efficacy of such purported sports supplements and not only publish the findings in acceptable journals but also write reviews for lay magazines targeted to athletes. Educating athletes about the truth underlying the efficacy of most sport supplements is the key to minimizing their sales and use. Such has been the case with popular sport supplements of old, a good example being the mineral chromium.

You have been involved with the story of creatine supplementation in sport, by undertaking original research, writing a whole book on this supplement, and being a member of the panel of the American College of Sports Medicine who wrote the position stand on the physiological and health effects of oral creatine use. What are your comments on the potential application of creatine supplements for sport and medical uses? Why did the ACSM position stand take such a conservative view of the performance benefits of creatine?

As documented in our book Creatine: The Power Supplement (1999), we (co-authors J. David Branch, PhD, and Richard B. Kreider, PhD) presented data generally supportive of the use of creatine as an effective ergogenic aid for certain types of exercise tasks, particularly very high-intensity repetitive exercise involving the use of phosphocreatine as an energy source. We also highlighted some of creatine’s possible beneficial medical applications. Several previous and subsequent reviews and meta-analyses have also presented a synthesis of the available data supportive of beneficial ergogenic effects and medical applications.

Given the data available when the ACSM roundtable was held in 1999, the conclusions regarding creatine supplementation and exercise performance appear to be reasonable. The conclusion in the published abstract notes that “although Cr supplementation exhibits small but significant physiological and performance changes, the increases in performance are realized during very specific exercise conditions. This suggests that the apparent high expectations for performance enhancement evident by the extensive use of Cr supplementation are inordinate.” This statement may appear to be conservative. However, the main points in the abstract are not conservative. For example, one statement is “Exercise performance involving short periods of extremely powerful activity can be enhanced, especially during repeated bouts of activity. This is in keeping with the theoretical importance of an elevated PCr content in skeletal muscle.” The summary also notes, “Cr supplementation is associated with an enhanced accrual of strength in strength-training programs, a response . . . may be related to a greater volume and intensity of training that can be achieved.” These statements support an ergogenic effect of creatine supplementation. The ACSM roundtable also notes some possible medical applications of creatine supplementation.

Creatine has received considerably more research attention than any other sport supplement, possibly with the exception of carbohydrate/fluid supplementation and prolonged aerobic endurance performance. Research suggests that both may be effective ergogenics under specific exercise circumstances.

Our search of your early publications found several studies on alcohol use and exercise performance. Where did that interest arise? The American College of Sports Medicine released a position stand on the use of alcohol in sport in 1982. Are you surprised that we haven’t really updated our research and position on alcohol use in exercise in view of the common reports of binge drinking by young athletes?

Going back to my high school days, I recall seeing our quarterback sipping from a cola bottle before one of our football games. It was not a cola soda, but whiskey, which he indicated helped him relax and play better. His reasoning may have been off, as we finished the season winning only 3 of 10 games. While serving in the paratroopers, one of my friends would drink from a flask of whiskey before each jump, indicating it provided the courage necessary to jump from a perfectly safe airplane. During my college days I also observed the effects of alcohol on the behavior of several classmates, some perceiving they now had the skills of Rocky Marciano, a world heavyweight boxing champion at the time. These and other experiences motivated me to explore the effects of alcohol on exercise performance, which became the topic of my doctoral dissertation.

My alcohol research has focused mainly on its effects on exercise performance and related physiological responses. However, I have also written about the social and health aspects of alcohol as related to exercise and sport. Some research has investigated the effects of social alcohol consumption on exercise performance and, in general, light social drinking the day or two before competition does not impair exercise performance. Some data also suggest that light, social drinking, sometimes referred to as low-risk drinking, may provide some health benefits. However, research has shown that heavy alcohol consumption the evening before a rigorous exercise task the following morning may impair performance, and numerous studies document the potential health hazards of acute or chronic excess alcohol intake. Although some sport-governance associations have provided information to athletes regarding the potential dangers of binge
drinking, alcohol use among athletes remains popular, including high school, college, and professional athletes.

You are Eminent Scholar Emeritus in the Department of Human Movement Sciences at Old Dominion University, having “retired” in 1997. We know you are an avid sports fan—you often shoot me progress reports of Aussie basketball players in the U.S. college system, and your email address is profrunner. How do you continue your interest in sports and sports nutrition?

My continued interest in sports is related to a number of factors. Having been exposed to a wide variety of sports as a physical education major, and having coached a variety of sports, I have developed a love affair with sports competition. I have also been associated with Old Dominion University for over 40 years and try to take in as many sport events as possible, including both the men’s and women’s teams. I occasionally talk to some of the teams during preseason conditioning about the importance of nutrition to their specific sport performance.

Moreover, I still compete in sports. As an athlete I was always involved in running to prepare for a specific sport, doing sprints for football and long-distance running for weight control in wrestling. When I joined the ODU faculty in 1968, I read Ken Cooper’s then recent book, Aerobics, and took up running primarily to help maintain fitness, and I worked up to running 3–5 miles a day several times a week. I also coached the university cross-country team for 4 years and thus studied various training strategies for distance runners. In 1972, one of my graduate students, Jerry Bocrie, founded a local running club, the Tidewater Striders. The club sponsored a number of local road races, and I became hooked on distance racing. I began running marathons in 1976 and the following year developed a college course titled “Marathon Running,” one of the first in the country. The final examination was either the Marine Corps Marathon in the fall semester or the local Shamrock Marathon in the spring. One of the benefits of teaching this class is that I always had a cadre of young runners with whom to train. Over the years I have competed in about 1,000 races and over 120 marathons. Thus, the email address is profrunner, the prof representing professor, not professional.

Several factors have also helped maintain my interest in sport nutrition. Although I retired from ODU in 1997, I have maintained an office in our department and teach a course occasionally, mainly our course in nutrition for fitness and sport. I also continue to provide lectures to runners and other athletes about sports nutrition. Additionally, revising my book Nutrition for Health, Fitness & Sport, now in its 9th edition, consumes a good deal of my time but keeps me abreast of current research findings.

You’ve almost lived the history of sports nutrition over the past 40 years. What do you think have been the key discoveries? What have you done to implement these findings in your own sporting pursuits or your work with other athletes?

As research regarding the effects of dietary practices on both health and exercise/sport performance has progressed rapidly during the past half-century, I think one of the major findings is the fact that the diet that is optimal for an athlete’s health is also the one that is optimal for his or her sport performance. There are certainly some research findings that may apply to athletes under certain specific conditions, but in general a balanced, varied, moderate diet providing adequate energy and essential nutrients to maintain an optimal body weight is the key to the typical athlete’s diet. This concept is the first point in my presentations to athletes. Focus on healthy foods.

When I was younger, little focus was placed on the health benefits of nutrition. However, this began to change in the 1960s as epidemiological research evaluated the link between diet and heart disease. My personal diet also started to change when I wrote my first nutrition book in the early 1970s. Over the succeeding years my diet has evolved from one rich in high-fat, high-sugar foods to one that mostly contains whole-grain breads and cereals, fruits, vegetables, and lean protein sources, mainly fish, poultry, and nonfat dairy products. Although exercise in itself provides many health benefits, so too does a healthy diet, and the combination of exercise and healthy eating may help compound the beneficial health effects.

Over a lifetime of achievements in research, education, and writing, what do you consider the three most important activities or outcomes of your work?

One would be the achievements of my students. Of the three major focal points (teaching, research, and service) used in consideration for tenure and promotion at most universities, my major focus was always teaching. My bachelor’s degree was earned at a teachers college, and my professors conveyed to me the importance of exercise as a means to personal health enhancement, both physical and mental. My goal as a professor was similar, and it has been so rewarding to see students develop a deep appreciation of the manifold benefits of proper exercise and healthful nutrition not only to enhance their own health but also, through their role as an educator or health professional, to beneficially affect the health of others.

Another achievement would be the development of the Exercise Science program of study at Old Dominion University. When I joined the faculty in 1968, our sole degree was the Bachelor of Science in Physical Education to prepare teachers. Our faculty began to expand, including professors with expertise in biomechanics, sports psychology, and motor learning. In the late 1970s we began to add additional exercise science courses, and eventually, using courses from other departments, such as Advanced Anatomy and Physiology in the Biology Department, I proposed a concentration area of study in exercise science within our departmental offerings. Many of the students who enrolled in this program matriculated on graduation into other health-related graduate study programs, such as physical therapy. The exercise science concentration in our department has grown substantially,
and currently we offer not only the bachelor’s degree, but also master’s and doctoral degrees.

Yet another professional landmark would be publication of my first monograph in 1974, *Drugs and Athletic Performance*, which summarized the world literature regarding the effects of various pharmacological agents on exercise and sport performance. The book also covered the effects of various “food drugs” such as alcohol and caffeine, which stimulated development of my second monograph, *Nutritional Aspects of Human Physical and Athletic Performance*, in 1976, one of the first texts to summarize the putative effects of nutritional strategies, including use of various dietary supplements, on exercise and sport performance. These two monographs served as the basis for more than 20 subsequent books, including multiple editions, which have been translated into 10 different languages.

*Is there one basic principle you live by?*

Tough question, as one has many different life goals. In relation to professional goals, my response incorporates the interaction of two common phrases, *Life is like sport* and *Be all that you can be*. One of the major tenets of *Life is like sport* is that you get out of life what you put into it, which reflects the phrase *Be all that you can be*. We all have certain abilities and limitations, and in whatever important task that we may engage we should try to maximize our abilities and minimize our limitations.

*What advice would you give yourself if you could go back 40 years? What advice would you give to a young researcher about to embark on a career in sports nutrition?*

Other than buying several thousand shares of Microsoft, in retrospect there is little I would do differently. I have truly enjoyed all aspects of my professional career, including teaching, research, and professional service. I looked forward to going to work every day. I had wonderful colleagues in our department and throughout the university who participated in our research efforts. I was able to interact with and form friendships with distinguished exercise scientists worldwide and was provided many opportunities for international travel. Every 4 months I had the opportunity to meet and interact with dozens of new students seeking knowledge.

Life was good. One of the other adages associated with *Life is like sport* is that *Sometimes you get lucky, and sometimes not*. We have all seen examples of this adage in both sport and life. In my professional career, I was lucky. I was in the right spot at the right time. Exercise science as a field of study was being conceived. Sport participation by the masses was becoming increasingly popular, as was the use of various ergogenic aids, including sports supplements, to enhance sport performance. My doctoral research involving the effect of alcohol on exercise performance set the stage for a 40-year career as a university professor.

For the young researcher pursuing a career in sport nutrition there may be various employment opportunities, such as in the sport supplement industry, but my focus will be a career as a university professor. Here are a few general recommendations.

- I would highly recommend pursuing postdoctoral study in an area that may attract research funding. Seek out mentors who have published extensively in this area and who have established a record of external funding. When I was a young professor, the main requirement for tenure and promotion was excellence in teaching. That focus has changed, and although teaching excellence is still an important consideration, excellence in research now appears to be the primary criterion for tenure and promotion. In particular, most universities reward establishment of a record in external funding.
- Read a wide variety of literature, not just scientific journals but also lay magazines dealing with sports, exercise, and health, as well as publications from various sports organizations. Encourage your students to do the same, and discuss new issues in class. For example, our research with blood doping in the early 1970s evolved when one of my graduate students, a distance runner, brought to class an article discussing rumors of its use in the newsletter *Track & Field News*. Our research with other supplements, such as *Eleutherococcus senticosus* and inosine, was stimulated by advertisements in sports magazines.
- Establish relationships with other departments within the university and other local educational or medical institutions that may become involved in collaborative research. Some university departments may provide access to laboratory equipment essential for data collection, whereas others may provide various services. For example, the Department of Medical Technology provided inexpensive blood testing during our early collaborative research. Collaboration may enhance opportunities for major research funding. Faculty members in our department, Sheri Colberg-Ochs and David Swain, have collaborated with a local hospital-associated diabetes institute and have received National Institutes of Health grants involving exercise and Types I and II diabetes.
- Although research funding is important, it is not a necessity to conduct high-quality research. Your time and effort, as in the *Be all that you can be* concept, may be the key. Paying investigators and participants is often one of the key expenses in research. Involving students in research as part of academic classes and offering some benefits to participants may minimize such expenses. Offer undergraduate and graduate research courses to recruit research assistants, and get involved with university or local sports groups to recruit subjects. For example, offer lectures on sport nutrition to university teams and local sports groups such as running clubs. Join local
clubs in the sports you practice. To entice subjects, offer free services such as body-composition analyses and VO$_{2\text{max}}$ testing, which may also be part of your research protocol. For example, I have provided lectures on the physiology of running and sports nutrition to local running clubs on a regular basis, and we have had no difficulty recruiting volunteers for our numerous studies involving the effects of various ergogenics on aerobic endurance capacity and performance.

Be all that you can be!

Louise Burke is Head of Sports Nutrition at the Australian Institute of Sport (louise.burke@ausport.gov.au) and Mel Williams is Eminent Scholar Emeritus in the Department of Human Movement Sciences at Old Dominion University (mwilliam@odu.edu; profrunner@aol.com). Louise thanks Christine Dziedzic, Alisa Nana, and Siobhan Moran from the AIS Sports Nutrition team for input in formulating these interview questions.