

THE DISCUS THROWER & HIS DREAM FACTORY

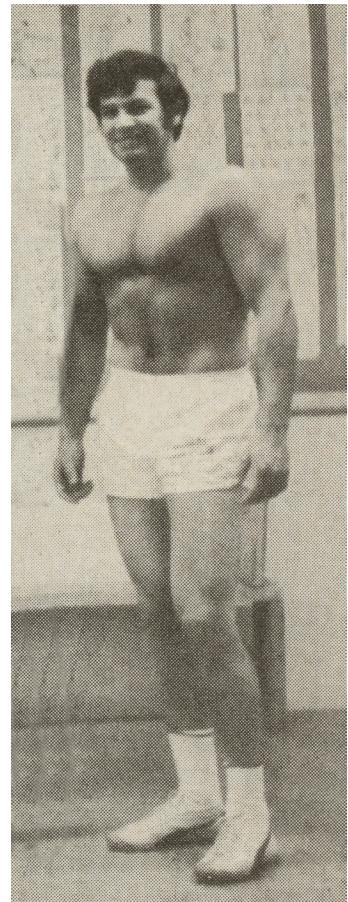
Gideon Ariel, Ph.D. & M. Ann Penny Ariel, Ph.D.



Dear Reader

Thank you for
Sharing my life

Gideon Ariel
August-2017



The Discus Thrower & His Dream Factory — Order Your Book Online
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THE DISCUS THROWER & HIS DREAM FACTORY

by

Gideon Ariel, Ph.D. & M. Ann Penny Ariel, Ph.D.

Forget Me But Do Not Forget About Me

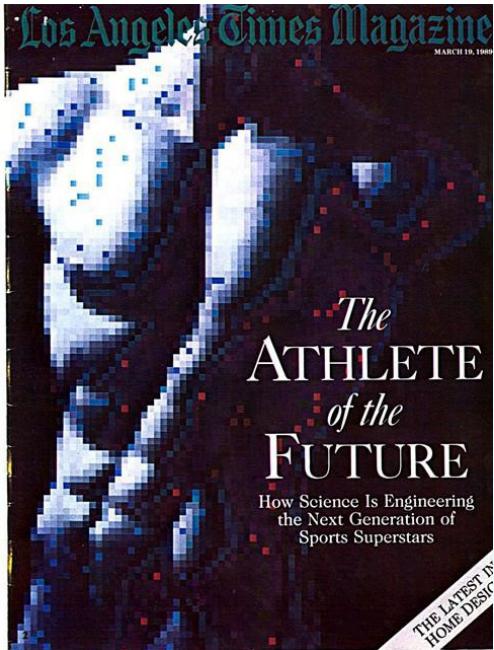


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First printing: 2017. Revision GBA-v3-2017-1026-1320.

ISBN: 978-X-XX-XXXXXX-X



Los Angeles Times Magazine

MARCH 18, 1989

The ATHLETE *of the* FUTURE

How Sports Scientists Are Harnessing the Mechanics of Motion, the Chemistry of Strength and the Power of the Mind

BY PATRICIA LOVEROCK

A RESEARCH SUBJECT NAMED ONU HEMBRE appears on a video screen in an Inglewood laboratory. Hembre is pitching the ball for the sake of science, so rather than Dodger Blue he wears only a baseball glove, shorts, socks, shoes and an array of sensors and transmitters. He is a man of few words, but his body, slightly skinny on the mound, is remarkably muscular and fluid. He winds and explodes across the screen in slow motion—frame by frame—hands, wrists, arms, torso, legs, all working together in perfect synchronization as he winds up and lets the baseball go.

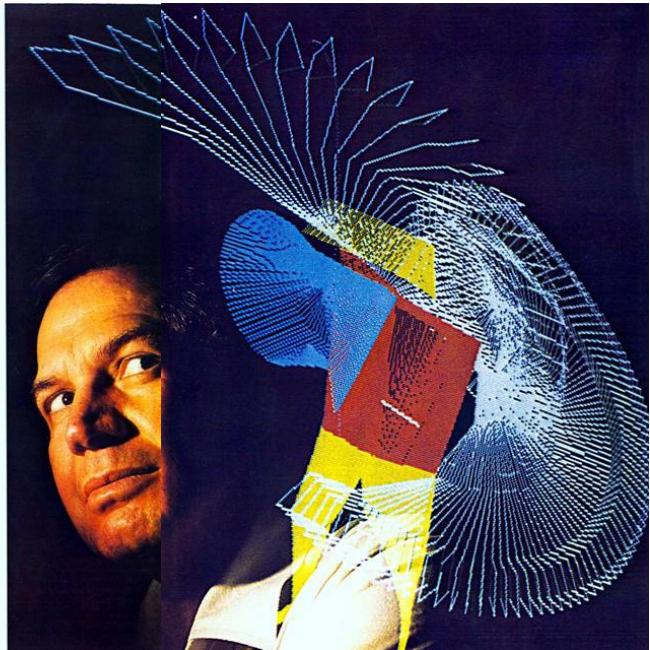
Three 16-millimeter movie cameras are on the front side of the mound and view the pitch at 300 frames per second. On an 8-foot-high console, 2000-foot reels of 1/4-inch magnetic tape record microprocessed signals from every twitch of Hembre's muscles. An oscilloscope's electrical wave traces his muscular activity, and a printer simultaneously spews out a copy of the image

Gideon Ariel, right, has developed computer models, such as this one

of a tennis player, to aid in sports training.

12 LOS ANGELES TIMES MAGAZINE, MARCH 18, 1989

Photographed by Brian Bratt



The Athlete of the Future - How Science is Engineering the Next Generation of Sports Superstars

<http://arielnet.com/ref/go/2022>

Acknowledgments



Credit for this book is due to the many people who have contributed to my life, success, and the details of creating this manuscript.

The original idea for writing the book came from Gerald Astor. Gerald was the reporter from Esquire Magazine who was sent to interview me prior to the Montreal Olympic Games. His article focused on my predictions, based on biomechanical results, for the optimum performance in specific track and field events. His story, "How to Know a Perfect Performance When You See One" was published in 1976. Although Gerald and I were unable to complete the manuscript, the idea to write this mémoire was planted.

Without my early mentors, Dani Dassa, Tomy Shwartz, Yariv Oren, and LeRoy Walker, I would not have competed in the 1960 Olympics. These men possessed kindness and compassion for a young, shy child, and they shaped him into a confident, successful adult.

Coach John Walker at the University of Wyoming provided the opportunity for me to obtain an education in the United States. His assistance and confidence in me allowed me to grow into a successful discus thrower and continue with my academic successes.

Acknowledgments must be given to my University of Massachusetts professors, Dr. Campney, the head of

the department, Dr. Benjamin Ricci in Physiology, and Stanley Plagenhoef in Biomechanics. These professors and their disciplines prepared me for many of my future activities. Their academic disciplines became intense focal points for me during my first years of graduate studies. In addition, Dr. Campney was very supportive of my early days in Massachusetts when my wife, Yael, and daughter, Geffen, were new to the New England area.

Additional acknowledgments must be given to Drs. Walter Kroll and Harry Campney at the University of Massachusetts. These two individuals significantly enhanced my knowledge, and contributed greatly to my success in my graduate program.

Dr. Conrad A. Wogrin was the head of the Computer Science Department. Dr. Wogrin provided grants which enabled me to use the main computer in the university. Although all students and faculty were given these “grants”, Dr. Wogrin was fascinated by the uses that I made of the computer system. He was also my professor in several computer classes and continually encouraged me to use the computer to its fullest capacity. He once remarked that he wished everyone would use the university computer as creatively and extensively as I did. He was a wonderful and supportive person and I appreciate all that he did to help me in those early years. I will forever be thankful for Dr. Wogrin’s help and guidance.

Professor Michael A. Arbib in the School of Computer Science inspired me to pursue a doctorate degree in Computer Science. Through his expertise, I enhanced my knowledge about the neurological interactions of the brain and nervous system.

University of Massachusetts track and field coach, Ken O’Brien, was instrumental in connecting me with many individuals within the track world including the head coach at Dartmouth College, Ken Weinbel. Coach Weinbel invited me to work with the Olympic athletes at the throwing camp in Hanover, New Hampshire, where Dartmouth College is located. Not only did I have the opportunity to work with many great Olympians, but I met my childhood hero Mac Wilkins for the first time there.

With coach Weinbel, Ann and I formed our first company, Computerized Biomechanical Analysis, Inc. (CBA). Coach Weinbel arranged for me to study computer sci-

ence classes at Dartmouth. One class was taught by Dr. John G. Kemeny and his colleague, Dr. Thomas E. Kurtz, who were the inventors of the BASIC computer language. BASIC (an acronym for Beginner’s All-purpose Symbolic Instruction Code) is a family of general-purpose, high-level programming languages whose design philosophy emphasizes ease of use.

Another important Dartmouth College connection was Mr. Carl Peterson. I met Carl at the Hewitt Computer Center and he helped me write my biomechanical programs in BASIC which could run on the Honeywell computer there. He also helped me to establish a remote access connection, so that I could use the computer in Hanover, NH, from our CBA office there and in my home in Belchertown, MA. Carl’s contribution may appear small when viewed through the prism of 2017, but in 1972, this type of computer power and remote access were tools far ahead of their time and available only in science fiction movies.

Our first business project was with the Spalding Sporting Goods Company. We were approached by Mr. Egon Rowmacker who asked us to solve a basketball problem for them. We solved that problem, and happily and successfully continued working with Egon for many years. We gratefully acknowledge his involvement in these research projects.

The man that took us from the amateur to the professional league, and helped us build a real business was Mr. Larry Graham. Without Larry, our business would not have been as successful, and this book would have far less material. Larry was a wonderful person and helped Ann and me in many ways. We will forever be thankful for his help and guidance.

Thanks to Mr. Bill Morrisroe at Wilson Sporting Goods for his belief in my abilities and his efforts on behalf of both of our companies. He supervised and assisted the growth and development of many research projects and the Computerized Exercise Machine.

Shortly after establishing CBA, I met Mr. Alan Blitzblau at the University of Massachusetts computer center. Alan was a talented programmer, and I hired him to translate my biomechanical program, written in BASIC to run on the system at Dartmouth College, to Fortran for the system at the University of Massachusetts. Alan

also created a word processor for the Data General Computer which CBA purchased. Our in-house word processor also had a sophisticated spell checker. Alan was a remarkable and gifted programmer who contributed greatly to the development of our biomechanical software capabilities.

Dr. Jeremy Wise must receive special recognition for his programming skills, his contributions to the physics and mechanics of our projects, and the development of the Computerized Exercise Machine. In addition, Jeremy has been a special friend for many years and we cannot thank him enough for his many contributions to our lives and business.

Mr. Justin Milliun and Mr. Peter Smart were major contributors to the growth and development of both software and hardware. Peter and Justin developed one of the first personal computers for me. They were also instrumental in many of the early hardware refinements needed on my Computerized Exercise Machine.

Another programmer who contributed to the development of my biomechanical software was Jim Walton from Penn State University. More recently, a programmer who added modules to our motion analysis system, is Rudolf Buijs. His contributions to our biomechanical software have been quite unique.

Several individuals were instrumental in developing the Olympic Training Centers. Dr. Irwin Dardik, Bill Toomey, and Russ Hodge listened to me as I described what I had seen in the East German Olympic sports center in, then, communist East Germany. I explained that American athletes no longer had an edge on the world stage unless we began to train in a dedicated fashion. These men helped me start the Olympic Training Center, initially in Squaw Valley, and later in Colorado Springs, CO. Without their devotion to the project, and without the efforts of Colonel Don Miller, there would not have been a center for the Olympic athletes.

Another contributor to our success is the American hammer thrower, Mr. Ed Burke, who introduced me to the Universal Equipment Company. In addition, much credit must be given to Mr. Chuck Coker and Mr. Harold Zinkin for involving me in the development and improvement of the Variable Resistance Exercise system introduced by Universal Equipment Company.

Two unique contributors were William Simon, Secretary of Treasury at the time, and William Casey, the former CIA Director. They formed a company with me and Dr. Dardik: "Life System Inc." It was a special privilege for me to work with these two remarkable men.

Special acknowledgment is extended to the late Vic Braden. Vic invited me to Coto de Caza, California, to visit him at his tennis college. Ann and I moved shortly thereafter and enjoyed a long and personal relationship with Vic and his wife, Melody. We miss him dearly.

Many people joined us at the Coto Research Center. Dany Saar was my right-hand man for 10 years. Mr. Bo Friedman and Mr. George Otott were helpful in the early days of the research center. Ari Selinger, coach of the US Woman's Volleyball team, worked with us for nearly eight years. His team won the Olympic silver medal in the Los Angeles 1984 Olympic Games.

Special acknowledgment is extended to our long-time friend and colleague, Mr. Robert Wainwright. Bob has contributed and shared many parts of our lives and we thank him for all of his help and effort over the years.

My accountant for nearly 40 years is Collin Hatch. He has worked with us throughout our time in California. Not only has Collin provided financial guidance but he has been a dear friend as well.

It may strike some people strange to thank our lawyers, but we have had wonderful ones who have contributed to our lives. Mr. John Soja has also been our dear friend for nearly 45 years. Mr. Norman Zafman has guided us through our intellectual property efforts and has been a wonderful friend as well. Lastly, Mr. James Weisz has provided excellent guidance and has been another good friend to us.

We have worked with several editors over the years to help with photos and contribute to the text. Gay Waley, Virginia Thiele, and Robert Schumacher all contributed to the best of their abilities. However, none of them knew all of the stories necessary to include in this unique and untraditional book. Nonetheless, I wish to thank them for the help they provided.

One of our editors is A.J. Ducusin. A.J. did an excellent job incorporating the many photos within in the text, creating the table of contents, indexes, and appendices.

He also designed the original cover pages. It has been an arduous task, but AJ has been wonderful to work with and I thank him for his efforts.

We initially struggled with the format of the book. When I have a problem, my last resort is to call my genius programmers. The youngest one on our team is Rudolf Buijs. He is actually a master in electrical engineering, and he is the one who wrote the software programming for the Gait, Renderer and the Wizard modules for our Ariel Performance Analysis system. When he recognized our struggles with formatting the book, he volunteered his help and, in no time, learned "Adobe InDesign" and converted the whole book into the wonderful format you read now. You can have a great idea, but without the help of other brains you are lost. Rudolf and I have worked together for more than 20 years and we have a wonderful relationship. So, I am indebted to Rudolf for all his contributions.

Special thanks must be given to Dr. James Hackney who saved my life by donating a kidney to me. Without his loving kindness, I would not have survived to write this book. I will be forever grateful to him and his wife, Polly.

I am grateful to and thank Mount Sinai Hospital and the Kidney Transplant Center in New York City. Without the dedication of Drs. Ron Shapiro, Antonios Arvelakis, Rafael Khaim, and Veronica Delaney, and all of the staff at Mount Sinai Hospital I would not be here today. These doctors and their staff not only saved my life but were exceptionally kind and caring as well.

Special acknowledgment and thanks are also given to the wonderful people at Renewal who accepted me as a kidney recipient and helped find and support my donor, Dr. Hackney. They are a very special organization who donate their time and efforts to support kidney donations.

Lastly, the most important person in my life and contributor to this book is my wife, M. Ann Penny-Ariel, Ph.D.

Ann not only knows the stories and details of my life, but she was able to "translate" my English into what we hope is an informative and entertaining book. I value her contributions and dedication to this project and for her enduring love for me. I hope she knows how much I love her.

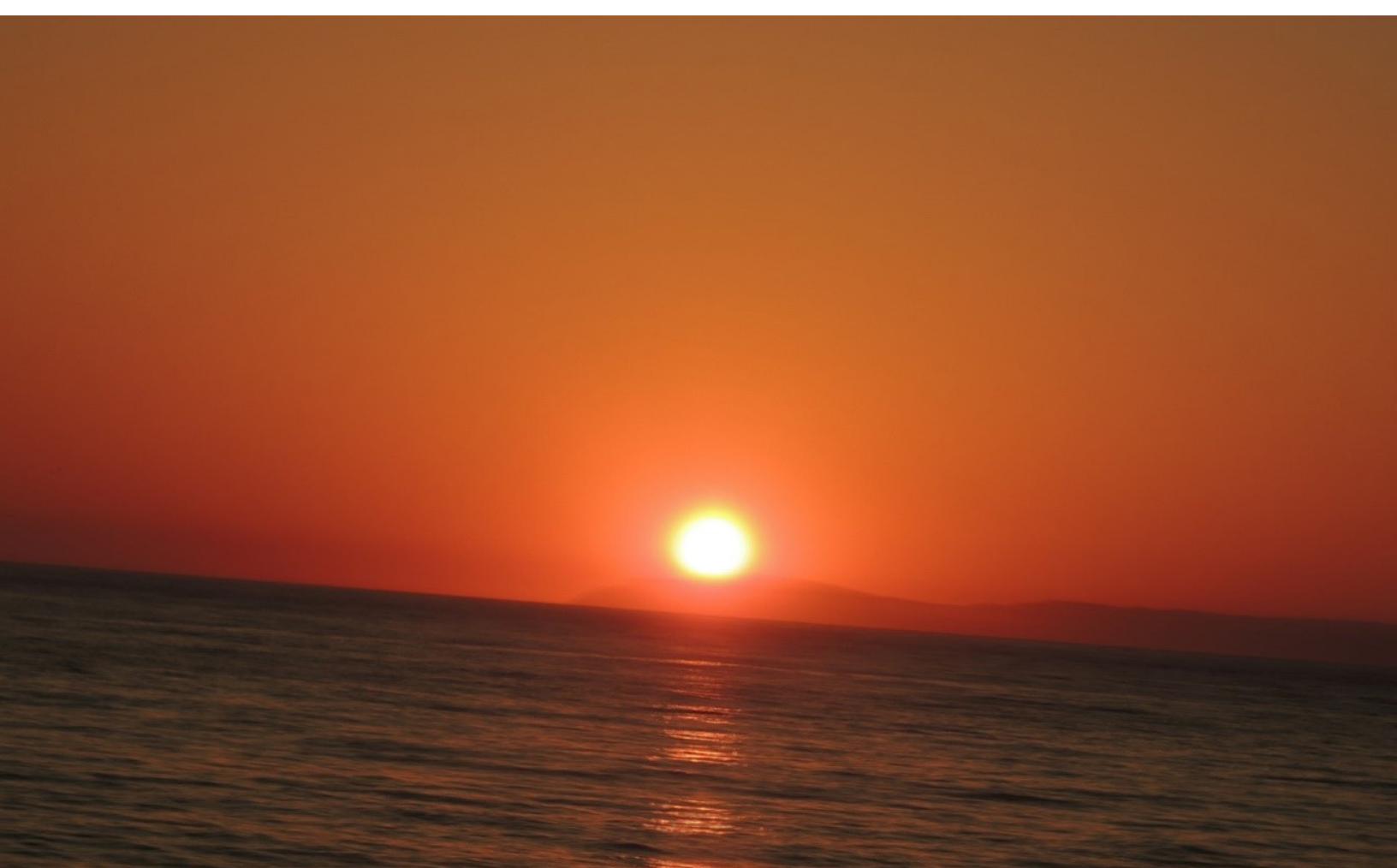
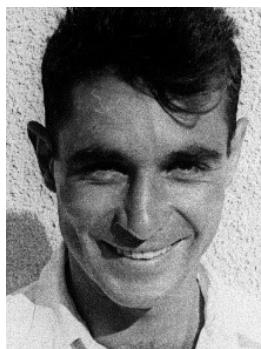


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Dedication

This book is dedicated to four beloved people. Without their influence, I would now be trapped in a black hole, rather than fulfilling my dreams.



To my childhood hero, Dani Dassa, a creator of Israeli folk dances and my sports instructor at Hadassim. Dani introduced me to the discus, and strengthened my belief, as a child, that I could one day represent Israel in the Olympics. It was only by virtue of my athletic skills that a scholarship for studying in America—and the infinite possibilities thereafter—was granted to me. I have never looked back.



To Yariv Oren (of blessed memory), my mentor and coach who befriended me as a young athlete, who encouraged me to overcome my shyness, and who gave me perhaps the greatest gift of all: self-confidence and hope.

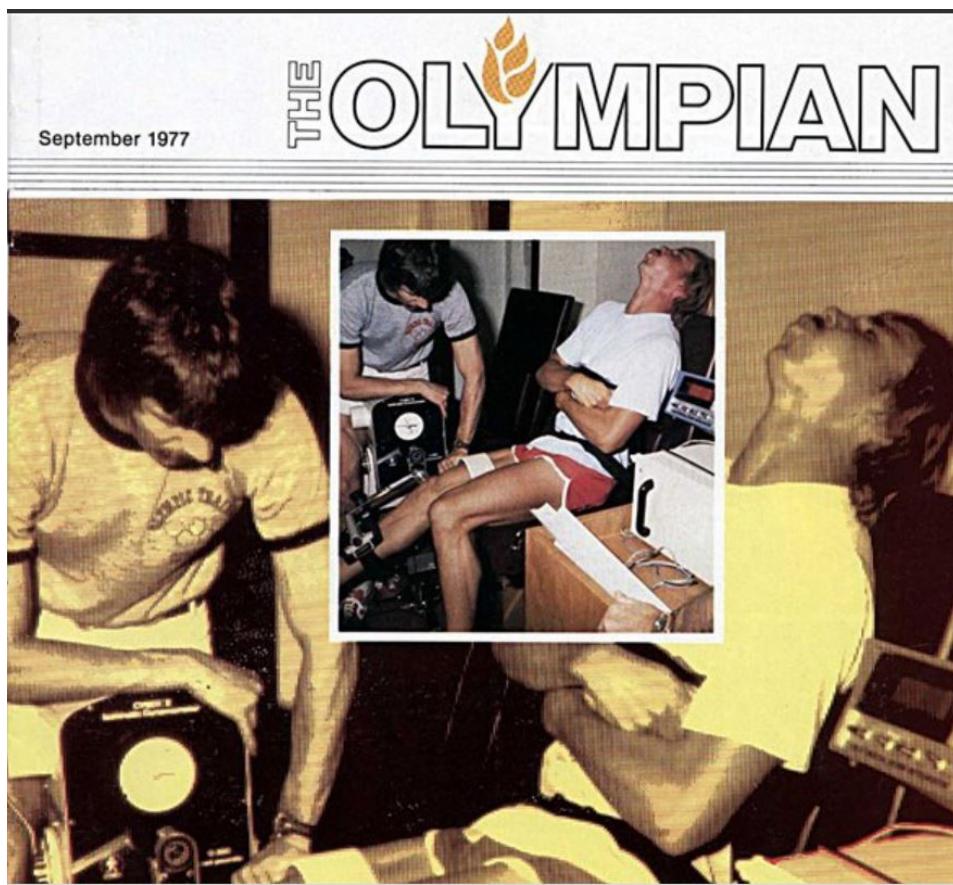


To Ann Penny, without whom I would never have reached the mountaintop. After 35 years of a creative collaboration, I finally married her, and I found her to be my everlasting joy—Ann Ariel.



To Dr. James Hackney, Professor of Physical Therapy and Biomechanics. He saved my life by donating his kidney to me. Without him, this book would never see the light of day. How do you thank a person like that? How do you thank someone who gave you life?

Foreword



The Olympic Training Center in Squaw Valley
<http://arielnet.com/ref/go/902>

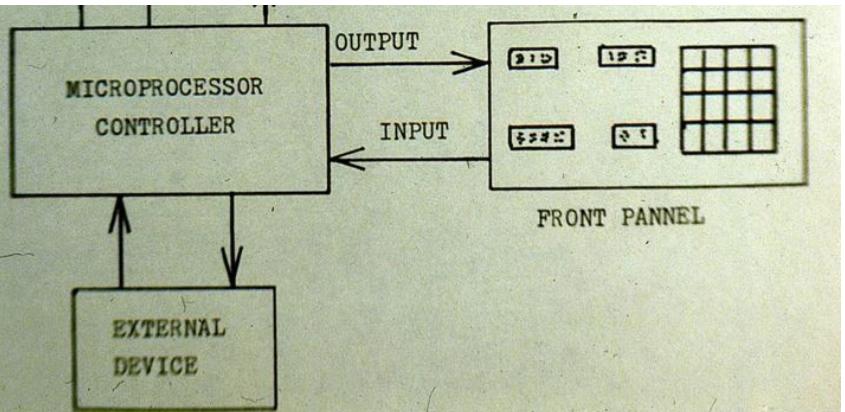
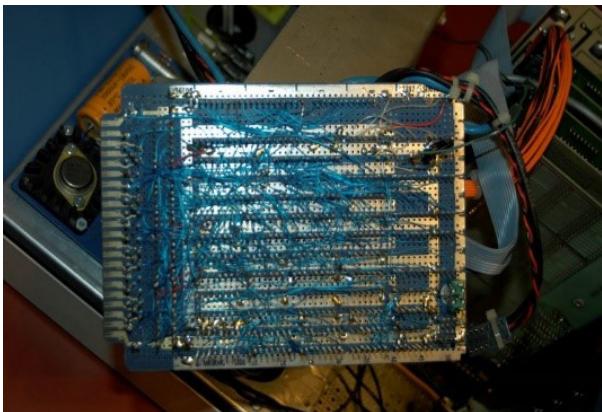
Why, at the age of 77, did I decide to write a memoir of my life? Actually,

I started to write this book more than ten years ago, so it has taken me a while to finish it. There are a number of reasons behind my decision to document my life and a few of these reasons are listed below:

If you visit the United States Olympic Training Center in Colorado Springs, CO, and ask the staff and administrators who started this beautiful training center, they will come with all different names. But Gideon Ariel will not be mentioned.

If you go to any gym or health club in the U.S. or around the world, and ask the trainers and the owners who developed the original machines that employed cams to vary the resistance, they will mention many names, but Gideon Ariel will not be one of them.

If you go to any store for athletic supplies to buy running shoes and ask who developed the first “air shoe” you will hear many names, but Gideon Ariel will not be mentioned.



The first PC
<http://arielnet.com/ref/go/905>



The first article on the Dynamic Variable Resistance
<http://arielnet.com/ref/go/903>



Today, Tom Brokaw
<http://arielnet.com/ref/go/901>

If you study the field of personal computers and ask who started it all, you will hear many names, but Gideon Ariel will not be included in the list of developers.

If you ask any of the engineers or sales personnel at Spalding, AMF, or Wilson Sporting Goods how the tennis racket developed from the head size of the 1970s to a newer, more modern model with a larger head, many names will be mentioned, but not Gideon Ariel's.

If you travel to Adidas' headquarter in Germany and inquire who developed their shoes, many names will be mentioned, but Gideon Ariel will not be one of them.

If you ask the engineers at NASA's Johnson Space Center in Houston who developed the first Computerized

The Canadian Society for Biomechanics Société Canadienne de Biomécanique

Proceedings of the
1st Annual Meeting

University of Alberta
Edmonton, Alberta
1974

HORIZONTAL FLOOR REACTION FORCE

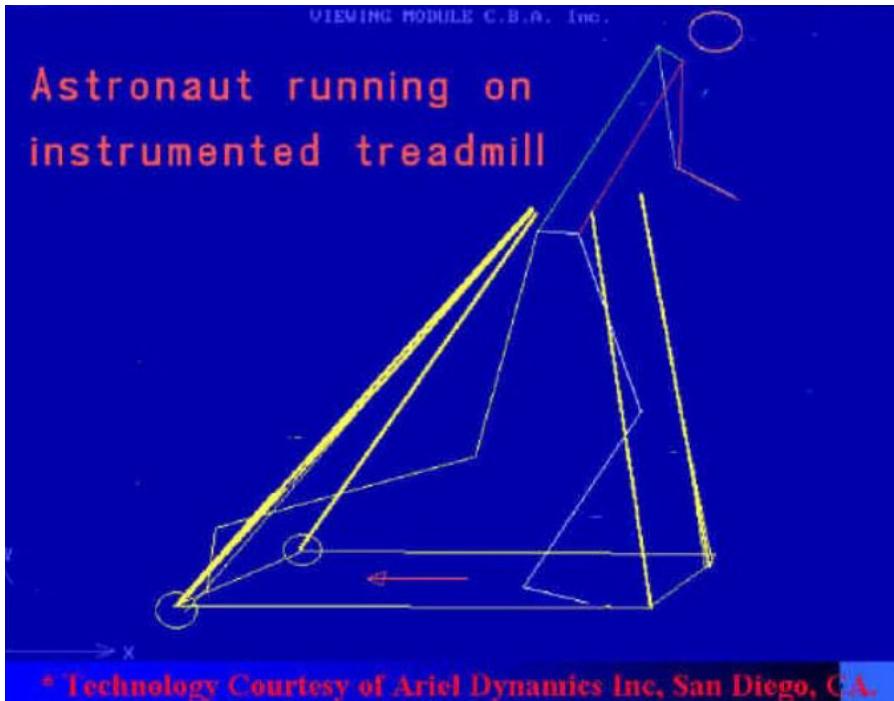
TOTAL FLOOR REACTION FORCE COMPONENT FROM STRAP
ESTIMATED SINGLE LEG COMPONENT

WALKING CYCLE

Design and Construction of Resistance Exercise Equipment

The Science behind Exercise Equipment

TEGA



Astronaut running on instrumented treadmill on NASA KC-135
<http://arielnet.com/ref/go/906>



NASA KC-135
<http://arielnet.com/ref/go/910>



NASA KC-135
<http://arielnet.com/ref/go/913>

Contract with NASA
SPACE ACT AGREEMENT
BETWEEN THE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
AND
ARIEL DYNAMICS, INC.

The LYNDON B. JOHNSON SPACE CENTER of the NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA), hereinafter referred to as JSC, and ARIEL DYNAMICS, INC., hereinafter referred to as ADI, desire to enter into a Space Act Agreement, hereinafter referred to as Agreement. The objective of this Agreement is to develop a space flight qualified Resistive Exercise Dynamometer (RED).



Space Act Agreement between NASA and Ariel Dynamics
<http://arielnet.com/ref/go/907>



APAS application in the Olympic Games
<http://arielnet.com/ref/go/914>



CBS Morning News
<http://arielnet.com/ref/go/4038>

Exercise Machine aboard the shuttles and the space station to prevent the deleterious effects of microgravity on astronauts, the name Gideon Ariel will not be mentioned.

If you ask who the Chairman of Biomechanics was for the U.S. Olympic Committee for eight years, my name will not be included.

The site for the modern pentathlon in the Los Angeles 1984 Olympic Games was in Coto de Caza. However, if you ask who arranged with that sports body and the LA Olympic Committee for this site to be chosen, no one would mention my name.

If you ask who adopted the women's volleyball team and arranged for their residence and support in Coto de Caza for eight years, and who went on to win the silver medal at the Los

Modern Pentathlon at the 1984 Los Angeles Summer Games: Men's Team Running

[Modern Pentathlon](#) at the [1984 Summer Games](#): [Previous Summer Games](#) • [Next Summer Games](#)

Events: [Men's Team](#) ▾

Host City: Los Angeles, United States

Venue(s): Coto de Caza Equestrian Center, Coto de Caza, California

Date Started: August 1, 1984

Date Finished: August 1, 1984

Gold: Italy
 Silver: United States
 Bronze: France



MD aims to improve nation's health using Olympic athletes as walking fitness labs
<http://arielnet.com/ref/go/915>



American Medical NEWS

AUGUST 1, 1977

MD aims to improve nation's health using Olympic athletes as 'walking fitness labs'

MD aims to improve nation's health using Olympic athletes as 'walking fitness labs'

Vascular surgeon Dardik (left) and computer scientist Ariel are collaborating at the Squaw Valley Sports Medicine Center to learn more about physical fitness using unique specimens—Olympic athletes.

When Irving Dardik, MD, was a college kid in the mid Fifties, he was not only captain of the track team at th U. of Pennsylvania, but also a top-notch sprinter.

He almost made it to the 1956 Olympics in Melbourne in the 400-meter dash, and planned to try again the next time around, at the 1960 Rome Games.

But in 1958 he entered medical school, and that ended his dream of competing in the Olympics. "In those days, you couldn't just leave medical school for something like that," he says.

Irving Dardik, MD, a vascular surgeon, quarter-mile, he achieved fame as a

MD aims to improve nation's health using Olympic athletes as 'walking fitness labs'

Vascular surgeon Dardik and computer scientist Ariel are collaborating at the Squaw Valley Sports Medicine Center

That procedure has helped a lot of arteriosclerosis patients lead more active lives, but Dr. Dardik shrugs it off as "only palliative." He would rather prevent heart disease than treat it.

ALL OF WHICH explains what he's doing in Squaw Valley, Calif., helping to train young athletes for the 1980 Olympics. He's not just interested in helping the United States win more medals at the 1980 Moscow Games—he sees the young athletes as walking, talking laboratories of physical fitness.

The U.S. Olympic Committee approached Dr. Dardik, who runs the Dardik Institute, on the grounds of the newly-opened coronary bypass graft technique

Taking place in that area is between a col-

Sports medicine—sports science, as Dr. Dardik and others at the training center speak of it—has suddenly become a great deal more sophisticated,

AMERICAN MEDICAL NEWS August 1977



The 1984 Olympics
<http://arielnet.com/ref/go/2714>

- Hydraulic Valve Assembly for Controlling a Hydraulic Cylinder. No. 6-898,013. 1986.
- Exercise Apparatus. Germany - No. P3715406. 1987.
- Exercise Apparatus. Japan - No. 62-081362. 1987.
- Hydraulic Valve Assembly for Controlling a Hydraulic Cylinder. Germany -No. P3709900,0. 1987.
- Hydraulic Valve Assembly for Controlling a Hydraulic Cylinder. Japan -No. 62-164126. 1987.
- Hydraulic Valve Assembly for Controlling a Hydraulic Cylinder. United Kingdom - No. 2,194,309. 1990.
- Exercise Apparatus. Canada - No. 1,279,669. 1991.
- Exercise Bar Acting Against Hydraulic Cylinder. W. Germany - No. 3042520. 1991.
- Exercise Bar Acting Against Hydraulic Cylinder. Canada - No. 1,143,760. 1992.

JOURNAL OF APPLIED PHYSIOLOGY
Vol. 32, No. 6, June 1972. Printed in U.S.A.

Effect of anabolic steroids on reflex components

GIDEON ARIEL AND WILLIAM SAVILLE

Department of Exercise Science, University of Massachusetts, Amherst, Massachusetts 01002

ARIEL, GIDEON, AND WILLIAM SAVILLE. *Effect of anabolic steroids on reflex components*. J. Appl. Physiol. 32(6): 795-797. 1972.—The purpose of this study was to investigate the effect of anabolic steroid on the nervous system by measuring the various reflex components of the knee jerk reflex. A double-blind technique was used to examine the effect of methandrostenolone (Dianabol) on the knee reflex of six male subjects. The anabolic steroid had a significant effect upon these reflex components. Significantly faster motor times and significantly slower latencies were obtained. From these results it can be concluded that the anabolic steroid acted upon the central nervous system and the biochemical processes involved in the reflex.

for the conduction of the nervous impulse from the receptor site back to the muscle motor point, via the ventral horn cells, and the time for the conversion of this electrical phenomenon into a chemically mediated response of the muscle were measured. Changes in the neurological component and the linking of this component with the biochemical processes of contraction in the muscle should supplement the established literature that has already shown consistent changes in the biochemical parameters.

METHODS



Effect of anabolic steroids on reflex components
<http://arielnet.com/ref/go/918>

If you wanted to know who researched the first and, maybe the only studies on the effect of anabolic steroids on Olympic athletes, you would find it in the Journal of Applied Physiology in 1972. I was the researcher and the paper's author.

I was involved in many projects which readers of this book will discover in detail. Making a statement is easy and may even sound like a loud-mouthed braggadocio, but I have included documents and pictures to verify all these statements.

This book is unique since you can read many of the statements, studies, and publication in their entirety on your computer, tablet, or phone by following the URLs that are included in the text or under illustrations. Alternatively, by downloading a free QR reader, you can use your tablet or phone to capture the QR-code and read the complete material.



Coaching by computer
<http://arielnet.com/ref/go/916>



Biomechanics for the 21st Century

by
Gideon Ariel, Ph.D.



Published on Tuesday, June 18, 2013 by Gideon Ariel



Biomechanics for the 21st century
<http://arielnet.com/ref/go/5006>



In many cases, I have used internet resources such as Wikipedia or Google search to locate information to supplement my own knowledge. For example, in Chapter 17 about NASA, I reported on the research with which I was personally involved but I also utilized internet sources to supplement much of the information about the individual astronauts. For many of the technical items, such as computer components, and for physical phenomenon such as force, velocity, and acceleration, I enhanced the information in my text with additional data, gleaned from internet searches. Numerous television shows or documentaries about me or my company are also available. Many of these have been included via links to resourc-

es on the Internet. The intention for including these resources was to better inform the reader with supplemental knowledge.

I intended this book to document my memories and accomplishments. However, I wanted the reader to have as complete an understanding of topics or people by providing additional information about them. My intentions of including these additional resources and information were not to mislead or plagiarize but, rather, to enhance other people and their accomplishments.

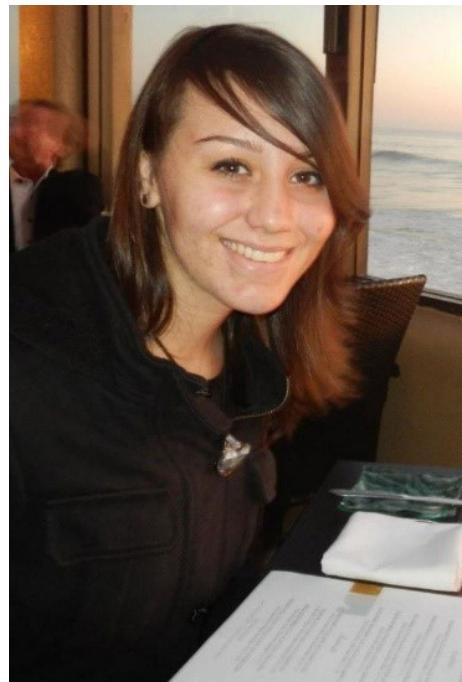
However, one of the most important reasons I wrote this book was so my daughters, Tova, Nomi, and Ilana, could learn what their father did during his lifetime. Since they are still relatively young, they are unaware of many of the things that their father accomplished. Perhaps this book will enlighten them about my life and achievements and they can be proud to be my daughters.



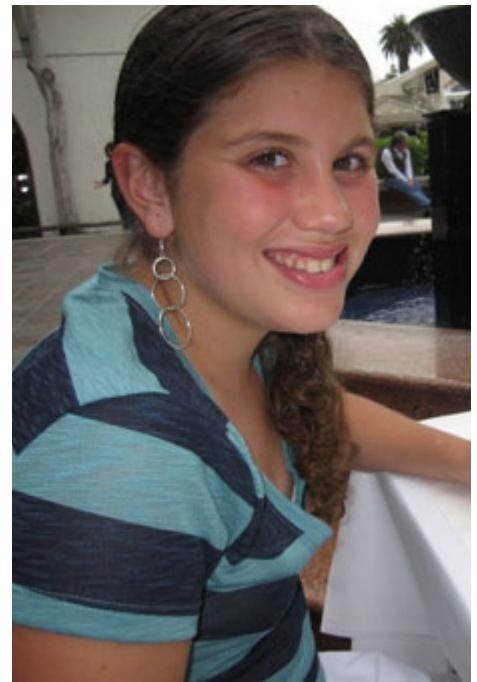
Tova
<http://arielnet.com/ref/go/2718>



Nomi
<http://arielnet.com/ref/go/2719>



Ilana
<http://arielnet.com/ref/go/2720>

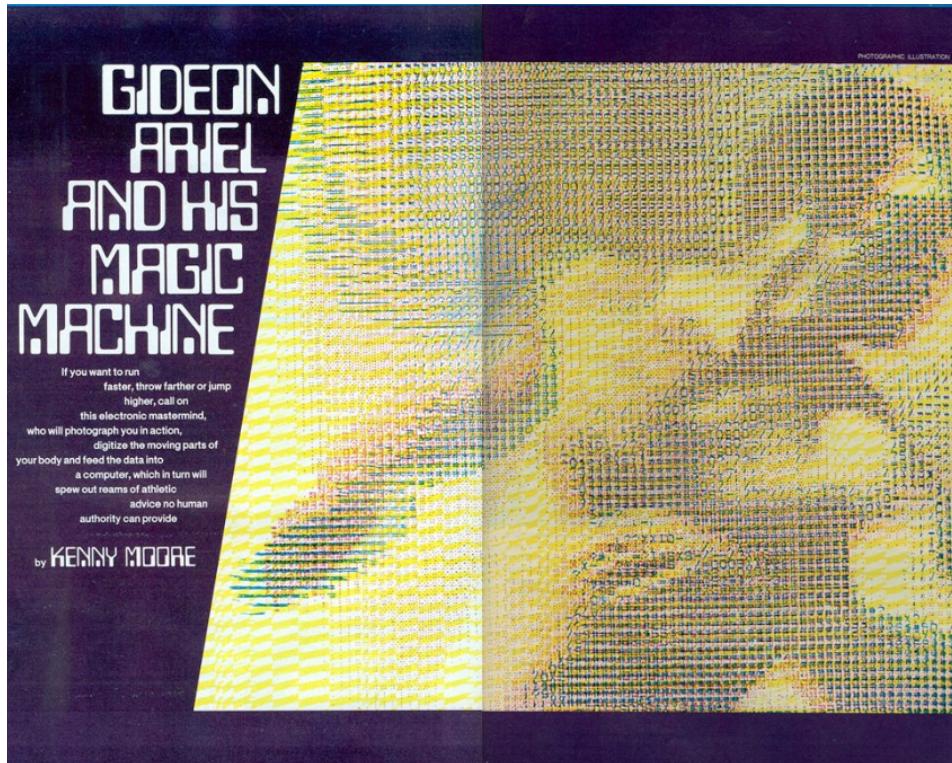


Introduction

“Everyone is a gold medalist in his/her own body”



Article published in Sports Illustrated
<http://arielnet.com/ref/go/1014>



If you want to run faster, throw farther or jump higher, call on this electronic mastermind, who will photograph you in action, digitize the moving parts of your body and feed the data into a computer, which in turn will spew out reams of athletic advice no human authority can provide, by Kenny Moore, Sports Illustrated.

What a crazy title for a book. How do sports and fantasy share the same planet let alone merge into a book? It is easy for me to tell you because this is all about me—I am that discus thrower and my mind is that factory where all those dreams were created. To explain, you should know that one sailing, floating throw of a discus in a single competitive event propelled me to become the successful person that I am to-

day. Throwing the discus saved me from a life as a juvenile delinquent and one fantastic victorious throw set me on the path to becoming a world-renowned biomechanist and operate my own dream factory.

In 2012 I received the highest award in biomechanics as you read below:

The recipient of the Geoffrey Dyson Award for the ISBS2012 Conference will be Dr. Gideon Ariel. Gideon is well-known in the field of sports biomechanics, due to his extensive knowledge of how physics applies to human motion, as well as his expertise in computer science. He is a former Olympic Athlete, and completed his graduate and post-doctoral work at the University of Massachusetts, where he received a Ph.D. in Exercise and Computer Science. He has published numerous scientific papers, founded an independent laboratory devoted to biomechanical research relating to human performance, and was chairman of the U.S. Olympic Biomechanical Committee.

My special discus result sent me to the Rome 1960 Olympic Games. From there, it is as though the discus threw me to America, the land of dreams. Once I saw the great, vast vistas that the United States offered someone like me, a young simple athlete from a tiny country, my horizons seemed limitless. Suddenly, after that discus throw that launched me into the world where dreams can come true, life became full of oppor-



The Geoffrey Dyson Recipient for 2012
<http://arielnet.com/ref/go/1015>



The World According to Gideon

By BOB CONDOR

Is he a genius or a madman? A dreamer or a schemer? An apostle of high-tech athletics? Whatever he is, Gideon Ariel most certainly is not afraid to speak up about the potential of biomechanics in sports.

It's 9:30 in the morning and Gideon Ariel, probably the most controversial figure in the budding field of sports science, is standing in the North Exhibit Hall of the Las Vegas Convention Center, making some final adjustments on his latest invention—computerized exercise machines, which he is exhibiting at a convention for physical therapists.

"I don't do many shows anymore," Ariel is saying with a strong Hebrew accent that still lingers after 20 years of living in the United States. "But this one is important; we're very interested in the rehab market. These machines are really just the first step for helping people with injuries and medical problems. I believe we can develop computers which will cure paralysis, taking over for a damaged central nervous system. But we have to educate physical therapists and doctors about such uses."

The 12'-by-12' exhibit booth is complete with a hand-painted, bumper-sticker size sign which reads "Ariel Dynamics, Inc. Trabuco Canyon, CA". It hangs on the curtain at the back of the booth. Ariel has crammed the area with his two exercise machines; one is for the upper body while the other is for the arms and legs. Each has computer, a keyboard, disk drive, videocassette player and TV monitor attached to it; printers are available to provide visitors with readouts of their efforts. At the moment, the monitors flash colorful graphics and emit beeps and blips as Ariel—tall, tanned, gray-tempted, slight paunch but strong limbs—is beginning to demonstrate his equipment. He has a look on his face like a small boy about to unwrap a birthday present.

A dozen people have gathered. And the 45-year-old Ariel is working them like a carnival barker. The hall doesn't even open for another half-hour; strangely enough, most of the onlookers are exhibitors themselves. This doesn't faze Ariel. He's talking non-stop and waving his arms forcefully; he is ready to deliver his first sermon of the day.



tunities without end. No longer was I perceived as a skinny, shy, young boy who would probably never succeed. Now, I had been an Olympic competitor. There were no limitations to what one could learn or do in the magnificent land of dreams.

My first big dream grew from a seemingly miraculous discovery I made while in graduate school. I learned that human motion could be scientifically measured. It was possible to combine the mechanics of Isaac Newton with the biology of people. What a fabulous tool! This dream of mine was no longer just a bubble on a wish list. Suddenly, I realized that a coach could assist a discus thrower without looking where the discus landed. The combination of scientific quantification and the rapid processing by a computer meant that sports activities could be analyzed quickly and accurately. The concept was mind-boggling and floated on the air almost more as a mirage than just a dream. Could such dream really come true?

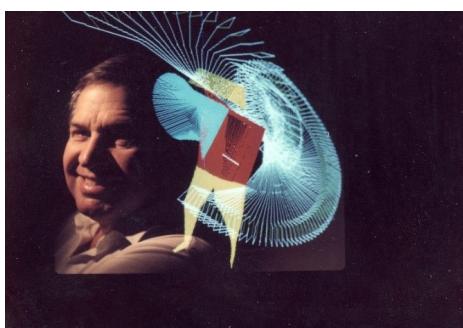
The answer resided in the sophisticated computer programming that I developed. The enhancements of sports techniques and performance analysis knew no bounds. "If it moves, it can be measured," became a legitimate mantra. So, what could I do with this marvelous, newly computerized analysis system? In America, anything is possible. So, I created a company.

Surprisingly for me, before we opened our office doors for the first time, we were swamped with projects. We had sporting goods companies clamoring for design assistance with golf balls and clubs, basketball structure and color designs, tennis balls and rackets, and ski boot re-



*The World According to Gideon: Is he a genius or a madman?
A dreamer or a schemer? An apostle of high-tech athletics?*

<http://arielnet.com/ref/go/1016>





Dr. Gideon Ariel and his wife Dr. M. Ann Penny Ariel
<http://arielnet.com/ref/go/1026>

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After I had developed my dream to quantify movement, I wondered whether it would be possible to use the computer to train my muscles. Needless to say, the answer was a resounding "yes", and what a fantastic device it is. The Computerized Exercise System (CES) is currently used to train athletes, rehabilitate injuries, and develop strength. Soon you will learn more about that big dream.

Dreams have no boundaries if you follow them. Imagination, luck, and hard work are necessary ingredients for success. If your mind bubbles, creates, and breathes life into dreams, then dreams can become real. The mind is the factory, which forges the dreams.

All these dreams would not be possible without my friend and wife, Dr. M. Ann Penny-Ariel.

Please note that this book does refer to some religious content. The following is an explanation of why G-d is written the way it is.

Jews never casually write any "Name of G-d."

This practice is not part of the commandment not to take the Lord's Name in vain, as many assume. The thought behind that commandment refers solely to taking that name in vain, or swearing by G-d's Name.



Frank Sinatra - "Yes, it was my way"
<http://arielnet.com/ref/go/2001>

*And now, the end is near
 And so I face the final curtain
 My friend, I'll say it clear
 I'll state my case, of which I'm certain
 I've lived a life that's full
 I've traveled each and every highway
 But more, much more than this
 I did it my way
 Regrets, I've had a few
 But then again, too few to mention
 I did what I had to do
 And saw it through without exemption
 I planned each charted course
 Each careful step along the byway
 And more, much more than this
 I did it my way
 Yes, there were times, I'm sure you knew
 When I bit off more than I could chew
 But through it all, when there was doubt
 I ate it up and spit it out
 I faced it all and I stood tall
 And did it my way
 I've loved, I've laughed and cried
 I've had my fill my share of losing
 And now, as tears subside
 I find it all so amusing
 To think I did all that
 And may I say - not in a shy way
 Oh no, oh no, not me
 I did it my way
 For what is a man, what has he got
 If not himself, then he has naught
 To say the things he truly feels
 And not the words of one who kneels
 The record shows I took the blows
 And did it my way
 Yes, it was my way*

