

THE COLD WAR'S IMPACT ON THE EVOLUTION OF TRAINING THEORY IN BOXING

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After World War II the Soviet Union was left as the sole military and political force capable of matching the United States. A forty-six year Cold War then ensued between the United States and the Soviet Union in the battle for global power and ideological supremacy. The Cold War was fought on many fronts, including the sporting arena. The former Soviet Union was highly successful in its pursuit of sporting dominance. During the Cold War era, in fact, the Soviet Union was by far the most successful nation in the Olympic “team” competition. The success of the “Big Red Machine” has been attributed to a number of factors, but the most significant was the allocation of enormous financial and scientific resources for sports development.¹ The availability of such resources meant that the Soviet Union conducted a wide variety of studies related to sport performance and training methodologies at a time when the United States and other free-world nations were still in their “infancy” in terms of sport science. Some of the Soviet research concentrated on applied aspects of training that would ultimately be incorporated into professional boxing in America from 1985 onwards. The areas of research included: periodization — the division of an athlete’s training program into specific cycles of time with the specific objective of peaking for major competitions; plyometrics — exercises that involve a rapid stretch of the muscle followed by a shortening of the muscle as seen in jumping; strength and power development, including weight training; optimal work-to-rest ratios; optimal means of recovery; the optimal training stimulus to facilitate adaptation; contribution of different energy systems in sport and optimal nutrition practices; and, of course, ergogenic drugs.

One example of Soviet research that specifically relates to boxing is V.I. Filiminov’s “Means of Increas-

ing the Strength of the Punch” that appeared in the January 1986 *National Strength and Conditioning Association Journal*. The authors used tensiometric dynamometers and observation to discover that the use of the legs when pushing off was responsible for producing 38.46% (the greatest percentage) of the power of the punch. Trunk rotation was second greatest at 37.42% followed by arm extension at 24.12%.² Filiminov’s research confirmed the importance of the legs in the transfer of force from the ground, through the trunk to the arm. Anyone not convinced of the effects of ground reaction force should try jumping up in the air and throwing a ball to see how far it goes. Then throw the ball with both feet on the ground and the importance of ground reaction force in the production of power becomes clear. This research validated the importance of incorporating lower extremity exercises such as squats, lunges, and in particular, Olympic lifts into the training program of boxers.

In 1984, L.P. Getke and I.P. Digtyraev examined the “Fundamental Means of Strength Training for Boxers of Different Ages and Qualifications.” They divided strength into maximum strength (the maximal amount of weight you can lift), explosive or reactive strength, and starting strength (the ability to overcome inertia) to see if there were any specific strength deficits. They concluded that it was “easiest to increase explosive strength by increasing maximal strength.”³ G.V. Kurguzov and V.Y. Rusanov, examined the use of “Interval Training for Increased Work Capacity for Boxers.” They recommended the development of an aerobic base during the general physical preparatory stage. This allowed sufficient recovery for anaerobic interval training during the specialized preparation stage.⁴ In 1983 B.A. Solovey investigated the effects of exercises with weights as a means of improving hitting speed in young boxers and

concluded that the use of weights significantly increased the speed of a single punch thrown by either arm.⁵

The Spread of Soviet Training Theory to the United States

Soviet research slowly filtered into America via track and field journals such as *Track Technique*, *Track and Field Quarterly Review*, the *Yessis Soviet Sports Review* and the *National Strength and Conditioning Association Journal*. It was not until the late 1970s and 1980s that carefully planned periodization and Soviet-training methods began to appear as part of consistent training structures in the United States.⁶ However, due to the unique nature of boxing it would take even longer before these training methods would become incorporated and then accepted as routine training methodologies,

Examples of articles that extolled the benefits of the new training methods included Kelly Corde's 1991 article that outlined the "Reasons to Strength Train for Amateur Boxing." The benefits of training Corde included were: increased anaerobic energy, injury prevention, increased contraction speed and increased force and power production.⁷ Mackie Shilstone (the conditioning coach of Michael Spinks) and Gerald Secor Couzes devoted a whole chapter to the "Physical Conditioning for Professional Boxing," in the 1993 *Medical Aspects of Boxing*. The chapter covers the concepts of training, cardiovascular conditioning, strength training, endurance training, overtraining, nutrition and the structure of individual workouts.⁸ In the same book Stephen Fleck and Jay T. Kearney outline the "Physical Conditioning Required for Amateur Boxing." The authors advocated a periodized approach to training dividing the year into a) a base period, b) a preparatory period, c) a pre-competition period and d) a peaking period. The authors recommend the use of Olympic weightlifting motions (such as the clean and jerk and snatch) for power production, the use of interval training, and upper and lower body plyometrics.⁹ The culmination of these approaches is seen in USA Boxing's 1995 247-page publication, *Olympic Style Boxing*, that includes chapters on interval training, plyometrics, cardiovascular training and weights.¹⁰

Despite advances in training theory the use of so-called "old-school" training methods such as long distance running and the avoidance of weight training still persist in boxing today. Tim Hallmark (Evander Holyfield's strength coach) and trainer Martin Nortiz both consider the use of these "old-school" methods to

be very prevalent today. "Too many coaches coach like they're back in the Stone Age," said Nortiz.¹¹

There are a number of reasons for this, with the primary one being a lack of education. In April 2001 the Nevada State Athletic Commission published a 174-page booklet entitled *Ringside and Training Principles* to address this issue.¹² The aim of the booklet was to dispense scientifically-sound advice to boxers from some of the sports more knowledgeable trainers. Dr. Margaret Goodman, the commission's ringside physician who spearheaded the project, and Flip Homansky, her colleague, explain various medical issues from proper weight loss and dehydration to chronic head injuries and concussions. In the rest of the text, reputable trainers like Teddy Atlas, Emmanuel Steward and Felix Trinidad discuss such topics as the three most dangerous practices that occur in the training gym, their criteria for stopping a fight, the use of headgear, the replacement fluids to give a fighter, the wrapping of the hands, and the post-weigh-in and pre-fight nutrition of the fighter. In the same book, strength and conditioning experts Tim Hallmark, Dave Honig, and Mackie Shilstone explain their philosophies in preparing a fighter to peak in optimal fighting condition. They also discuss what to eat, how much to run, how much to rest, and conditioning fallacies and myths. The booklet is the "first time any commission or professional boxing regulatory body has produced such a compilation of information."¹³

The booklet represents a significant step in the right direction but as Royce Feur notes it probably should have been done years ago.¹⁴ Martin Nortiz observes that unlike amateur boxing, professional boxing trainers do not have a certification program to test their knowledge, particularly on the medical aspects of training. This is one area where there is room for significant improvement.

Another reason for the persistence of "old school" methods has been a resistance to change. Nortiz refers to the old "If it ain't broke don't try to fix it" attitude that controls the behavior of many coaches.¹⁵ Trainers use their methods of success from the past or they copy fighters who have achieved success to train future athletes. They are reluctant to change or even be open-minded about new training innovations. It is also important to note that boxing is not included as a mainstream sport in major educational institutions. Consequently it does not benefit from immediate access to sport science departments and shared training facilities that enhance the growth of training knowledge.

The growth of sport science and in particular the

strength and conditioning profession has been significant in the last twenty years. Previously, as Angelo Dundee highlights, cornermen or trainers “were capable of doing every facet of the training regimen . . . everything that had to be done with the fighter.” Today the roles of cornermen have tended to be more specialized, which has annoyed Dundee. “They should be trainers. There shouldn’t be a cut man, bucket man, second man, third man, fourth man. You’ve got to be a complete man to help a fighter. You’ve gotta be able to do it all.”¹⁶

However, this is increasingly unrealistic with the tremendous expansion of training knowledge over the last twenty years or so. This is one of the reasons that strength and conditioning specialists such as Tim Hallmark (Evander Holyfield), Mackie Shilstone (Michael Spinks) and Courtney Shand (Lennox Lewis) have been increasingly consulted for their knowledge of boxing.

Weight training, once considered taboo in boxing, is much more prevalent today and as Austin boxing trainer Richard Lord notes, it is “just starting to get a hold.”¹⁷ One reason for weight training’s slow inception into boxing training has been its association with muscular hypertrophy (enlargement), which may or may not be desirable for a fighter. In weight-specific categories it could be extremely detrimental to add more muscle bulk if a trainer and a fighter felt that an individual had a better chance at a lower weight. Much of the controversy regarding weight training stems from trainers’ failure to understand that different types of weight training have very different effects on the body. Sets of ten repetitions with a one-minute rest between sets have been found to have a significant hypertrophic effect.¹⁸ This hypertrophy would be ideal for a light heavyweight making the transition to heavyweight, but not for a fighter in a lighter weight category. On the other hand, sets of two-to-three repetitions with heavier weights and, in particular, explosive movements such as the Olympic lifts (snatch and clean and jerk) have been shown to have a great effect on the activation of the nervous system (the ability to recruit a greater percentage of motor units and muscle fibers) with a minimal effect on muscle hypertrophy.¹⁹

It appears that boxers’ training practices are slowly catching up with the rest of the athletic world, although the universal acceptance of modern training methods may still be some way off. Testimony to progression is provided by trainers such as Richard Lord and Martin Nortiz, both of whom incorporate the use of weight training, plyometrics, interval training, and sound nutritional principles in the training of their fighters. Recent publications such as *Ringside and Training Principles* that feature successful conditioning experts in the

field of boxing are strong proponents of modern training methods.

The changes that have occurred in boxing training over the last century have been remarkable. The contrast of Mike Donovan preparing for a training session by drinking a glass of sherry with an egg yolk and walking at least eight miles per day with occasional hundred-yard runs to Evander Holyfield’s highly scientific program of physiological monitoring, weights, plyometrics, sport specific drills and the use of nutritional supplements, vitamins and minerals illustrates how far training has come in the last century. In the desire for improved performance, the future of training in boxing is, as Tim Hallmark remarks, likely to get “more and more innovative.”²⁰

The Revolutionary Training Techniques of Evander Holyfield

In 1986, shortly after Leon Spinks took the title from Larry Holmes, a young up-and-coming boxer by the name of Evander Holyfield teamed up with Tim Hallmark, a strength and conditioning specialist from Texas. Their relationship would prove to be extremely rewarding and play a significant role in Evander the “Real Deal” Holyfield’s outstanding success.

Holyfield was born in Atmore, Alabama on 19 October 1962. He began his boxing career at age eight when he entered a “pee-wee” tournament. He later went on to compile an amateur record of 160-14 with 75 knockouts.²¹ On 12 July 1986 in only his twelfth professional fight Holyfield upset the two-time world champion Dwight Muhammad Qawi in a fifteen round split decision to win the World Boxing Association (WBA) Cruiserweight (190 lb.) title. In October 1990 Holyfield made the transition to heavyweight with a stunning third-round knockout of James “Buster” Douglas (who had dethroned “Iron” Mike Tyson earlier that year) for the undisputed heavyweight title. Holyfield lost his first professional bout (and his title) in November of 1992 to Riddick Bowe but regained it a year later in a rematch. After a spell of over a year out of the ring due to a controversial “hole in the heart,” for which he was eventually medically cleared, Holyfield made an unspectacular comeback. It was enough, however, to earn him a long-awaited title shot against Mike Tyson. On 9 November 1996, Holyfield, a 25-1 underdog, dominated the fight with his supreme conditioning and knocked Tyson out in the eleventh round to regain the heavyweight title for the third time. This fight was one of the biggest upsets in boxing history. Holyfield proved that it was no fluke by repeating the performance in June of 1997, in what was

later called the "Bite of the Century." Holyfield was well ahead on points, when Tyson bit part of his left ear off. Tyson was later disqualified when he attempted to bite Holyfield's ear again. In November of 1999, Evander lost his title to the present WBC, IBF and IBO champion, Lennox Lewis, in their second match. Most recently Holyfield made boxing history on 12 August 2000 when he outlasted John Ruiz to win the vacant



WBA title and become the first boxer to win a heavyweight championship on four occasions. Tim Hallmark, of Wimberly, Texas, works with former heavyweight champion Evander Holyfield on stretching after a recent workout. Hallmark is part of a new breed of boxing trainers who incorporate scientific weight training methods along with ring and roadwork.

--Courtesy Tim Hallmark

Evander Holyfield and Tim Hallmark

In 1986 Evander Holyfield approached Tim Hallmark for assistance with his fight preparation.²² After an analysis of the sport of boxing Hallmark abandoned the traditional miles of roadwork and hours of sparring and replaced them with a comprehensive weight training program, sprints, and specific conditioning drills such as plyometrics (i.e. box jumps). Hallmark's approach was methodical and incorporated the latest advances in training theory and sport science. During conditioning drills Hallmark monitored Holyfield's heart rate to assess workrate and recovery. With this conditioning Holyfield's heart rate would drop from maximal to 130 beats per minute at the end of one minute's rest, just like the period between rounds. "When he first started," Hallmark said, "he could only drop to 175 or 180 beats per minute but now every round he goes out 66% more recovered."²³

In a 1987 *Sports Illustrated* article, Clive Gammon remarked that the combination of Hallmark's modern training techniques and Holyfield's dedication was

the "stuff of which revolutions are made."²⁴ Hallmark's conditioning had an immediate impact. Alluding to the Qawi fight Holyfield remarked that Hallmark "put me into that tight so good that I could work fifteen rounds and throw 1,290 punches."²⁵ This is over twice the number of punches thrown by Spinks, whose work output at the time was considered high.

Other innovative training techniques included the use of what Hallmark termed the "shadow vest." First bungee cords were used to tie Holyfield's lower body down to the floor to provide downward resistance. Then he had Holyfield put on a heavy vest so that his upper body also had resistance. Hallmark explained the training involved, "We have him start throwing punches . . . He's up to the point where he does 160 to 180 contractions in two minutes compared to the 60 to 80 punches that he will normally throw in a three-minute round."²⁶

Holyfield also followed Hallmark's comprehensive weight training program, which is generally credited for Holyfield's increase in size from 185 pounds to 210 pounds with no gain in body fat. The greater size allowed him to move up to the heavyweight division and compete for much greater prize money. In an interview

last November, Hallmark outlined his philosophy on weight training and the program he used in preparation for the Mike Tyson fight.²⁷ It consisted of sixteen sets of weights done on a Monday, Wednesday and Friday, in what Hallmark calls a “high intensity” workout. For each set, Holyfield performs eight to twelve repetitions not quite to the level of complete failure. Hallmark’s reasoning was to simulate the same physiological and mental feeling of tiredness that Holyfield would experience when competing in the ring. Hallmark explained, “So you’re getting a good cardiovascular workout because you’re going anaerobic every so often, you’re getting good endurance and strength because you get to the point where you really have to work hard to keep the same speed . . . It makes you mentally suck it up and do the next set even though you feel like you’re not quite ready to.”²⁸

In collaboration with a sports medicine physician, Holyfield’s blood, urine, and saliva are also analyzed to give hormonal and metabolic feedback on his state of health and response to training. Hallmark is also actively involved in Holyfield’s nutrition program. Holyfield takes various nutritional supplements, multivitamins and minerals (from Champion Nutrition and Sports Research) to facilitate optimal energy levels and recovery between training sessions.²⁹

Hallmark and a growing number of strength and conditioning specialists have revolutionized the way boxers train. As a positive testimony to his methods, Hallmark has been asked to oversee all aspects of the strength and conditioning program for USA Boxing at the Olympic Training Center in Colorado Springs. Hallmark is the first to admit that the transition into professional boxing was not easy. “When I first broke into boxing they acted like what I was doing was something from another planet.”³⁰

Notes:

¹ For information on the rise of Soviet sport see: Yuri Brokhin, *The Big Red Machine* (New York: Random House, 1978).

² V.I. Filiminov, K.N. Koptsev, Z.M. Husyanov and S.S. Nazarov, “Means of increasing Strength of the Punch,” *National Strength and Conditioning Association Journal* 7(December/January 1986): 65-66.

³ L.P. Getke and I.P. Digtyraev, “Fundamental Means of Strength Training for Boxers,” *Soviet Sports Review* 24(December 1989): 192-194.

⁴ G.V. Kurguzov and J. Rusanov, “Interval Training for Increasing Specialized Work Capacity of Boxers,” *Soviet Sports Review* 23(March 1988): 13-14.

⁵ B.A. Solovey, “Exercises With Weights as a Means of Improving Hitting Speed in Young Boxers,” *Soviet Sports Review* 18(June

1983): 100-102.

⁶ William Freeman. *Peak When it Counts: Periodization for American Truck and Field* (Mountain View, California : TAF News Press, 1996).

⁷ Kelly Cordes, “Reasons to Strength Train for Amateur Boxing,” *National Strength and Conditioning Association Journal* 13(May 1991): 18-21.

⁸ Mackie Shilstone and Gerald Secor Couzens, “Physical Conditioning for Professional Boxing,” In Barry Jordan, ed. *Medical Aspects of Boxing* (Boca Raton, Fla: CRC Press, 1993) 93-102.

⁹ Stephen J. Fleck and Jay T. Kearney, “Physical Conditioning for Professional Boxing,” In Barry Jordan, ed. *Medical Aspects of Boxing* (Boca Raton, Fla: CRC Press, 1993). 51-92.

¹⁰ USA Boxing, *Couching Olympic Style Boxing* (Carmel, Indiana: Cooper Publishing Group, 1995).

¹¹ Martin Nortiz. Taped interview by author, Austin, Texas, 30 November 2001.

¹² Steve Kim, “Ringside and Training Principles.” Available at <http://www.maxboxing.com/Kim/kim070601.asp>.

¹³ Royce Feour, “Commission Manual to Give Boxers New Line of Defense.” Available at <http://wwwlvvj.com>.

¹⁴ Ibid.

¹⁵ Nortiz interview.

¹⁶ Fried, 27.

¹⁷ Richard Lord, Taped interview by author, Austin, Texas, 30 November 2001.

¹⁸ Steven J. Fleck and William J. Kraemer, *Designing Resistance Training Programs* (Champaign, Illinois: Human Kinetics, 1997). 161.

¹⁹ Carl Johnson. Lecture notes. USA Track and Field Level 3 Coaching Course held at Louisiana State University, July 1999. Johnson is coach to Johnathon Edwards. world record holder in the triple jump. Prior to breaking the world record Edwards increased the amount of weight he was able to lift without adding to his body weight.

²⁰ Tim Hallmark. Taped interview by author, Austin, Texas, 11 November 2001.

²¹ Biographical information on Evander Holyfield is available at http://www.sho.com/scboxing/fighter_bio.cfm?fighter=evanderholyfield.

²² Dave Nightingale, “A New Fighter for a New Age.” *Sporting News*, 211 (15, April 1991): 23-25.

²³ Clive Gammon, “Tuning Up for Tyson.” *Sports Illustrated* 67(14 December 1987): 48-50; 65.

²⁴ Gammon, “Tuning Up,” 49.

²⁵ Ibid., 50.

²⁶ Nightingale. “New Fighter,” 24.

²⁷ Hallmark interview.

²⁸ Ibid.

²⁹ Showtime presents: *Interview with Evander Holyfield* on 22 July 2000. Available at <http://www.talkcity.com>.

³⁰ Hallmark interview.