

**Diet, Training, and Ergogenic Aids:
Search for the Competitive Edge.
The Evidence from Antiquity**

Louis E. Grivetti

Department of Nutrition

University of California

Davis, CA USA 95616

Office: (530) 752-2078

FAX: (530) 752-8966

e-mail: legrivetti@ucdavis.edu

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INTRODUCTION

The first Olympiad in antiquity was held in the year 776 before the Common Era. At this celebration there was a single event, the *stadion* or footrace. The victor was Koroibos of Elis. The race was one *stade* in length: the distance at Olympia being 192.27 meters. Eleven hundred years after Koroibos' victory, the 287th and last Olympiad before the modern revival was celebrated in the year 369 of the Common Era. In 1896 the first Olympiad of the modern era was held in Athens, Greece, and this summer in 2004 Athens will once again host the modern Olympic games.

At the 2004 Athens games the dietary plans and training systems of more than 10,000 athletes will be scrutinized. These plans/training systems will be as diverse as the number of athletes: some approaches will focus on meat-based diets, others will select a balance of protein, carbohydrate, and fat intakes; some will stress eating foods in a specific sequence, some only organic/natural items, still other dietary approaches will include fast foods and carbonated sodas; some athletes will take no dietary/nutritional supplements, others will consume dozens; some athletes will have attained their skills and potential promise primarily through genetics and hard training; others will cheat and attempt to outwit doping laboratories established during the past century. During the Athens games of August 2004, the urines of medalists and selected others will be tested: most will be negative – unfortunately some will be positive. For some athletes, participation at the games will be the ultimate reward, the acme of personal sacrifice and intense training programs that began years earlier; for some athletes, leaving Athens without gold medals will be devastating and they will be considered failures by themselves and by the international media; for other athletes – perhaps those who would finish 8th and last in the first heat of the men's or women's 200 meters – just stepping onto the track at Athens to be part of Olympic competition will remain one of the most joyful events of their lives

OBJECTIVES

The objective of this session is to consider use and abuse of ergogenic substances, and other mechanisms that might help elite modern athletes gain a competitive advantage in their events. The objective of my paper is to present an overview of this topic in reference to ancient athletic events, with specific focus on the Olympic games.

METHODS

Ancient Greek and Latin texts in original languages or in translation were inspected. Secondary accounts, reviews, and summaries of athlete-related research articles that date from the early modern period into the 21st century, also were reviewed and summarized (Butler, 1931; Gardiner, 1930; Golden, 1998; Harris, 1966, 1972; Miller, 1979, 1991; Robinson, 1981; Sargent, 1927; and Sweet, 1987). Olympic victor lists were reviewed and summarized (Africanus, 1980; Yalouris, 1979). My colleague, Dr. Antonis Zampelas, of Harokopio University, Athens, provided additional data on 50-year temperature and humidity averages for Olympia.

RESULTS

GENESIS OF GREEK SPORT

A great diversity of Greek and Latin sport-related information has survived that document sporting events at the Pan-Hellenic games held at Delphi, Isthmia, Nemea, and Olympia. Topics include themes such as: dietary concepts; training and recreational activities; structure and order of the games (announcement; the sacred truce; oaths; sequence of events and arrangements; organization and management of heats and preliminary matches; and awards); as well as social and medical views regarding athletics.

Students of sport history easily can identify the military origins of many events in the ancient and modern era Olympic games: boxing, horsemanship (management of chariots), javelin, jumping, running (with or without armor), and wrestling. Examination of texts and inscriptions reveals broad changes in diet and training techniques through time. Also enlightening are texts that document social issues associated with athletic performance, especially problems of bribery, cheating, injury or death during training or competition, winning at all costs, and social readjustment after retirement from athletic competition.

SPORT IN GREEK MYTHOLOGY

Records of athletic competition in ancient Greece begin with mythological accounts, where wrestling and running were prominent themes. Theseus, son of Aegeus and Aethra, is credited with development of gymnastics (specifically bull-leaping), weight lifting, and wrestling. Theseus lifted the great stone at Troezen through his understanding of leverage. Because of his ability to lift this great weight, the hero retrieved the accoutrements of power that later would be revealed to his father, the King of Athens. As he walked to Athens to reclaim his birthright, Theseus met, wrestled with, and defeated the giant Cercyon, through a combination of leverage and wit. Ancient texts also credit Theseus as the founder of gymnastics, for his skills in training the Athenian children in the arts of vaulting and bull leaping at the court of King Minos in Crete (Plutarchus. *Lives: Theseus*. 15:1 - 20:3).

Greek mythology identified prominent runners, both men and women. Atalanta, daughter of Schoeneus, king of Scyros, was noted for her beauty, grace, and speed. Atalanta's suitors were required to race against her; if successful, the prize was marriage – if unsuccessful, the prize was death. Tradition held that Atalanta, herself, would slay her unsuccessful suitor! Despite numerous negative outcomes, the ancient poets claimed that suitors continued to challenge for Atlanta's hand. Hippomanes, son of Macareus and Merope, ultimately defeated her through a ruse and after his victory, and agreement to marry, the couple "sinned" by making love inside the temple of Cybele, whereupon the offended Great Earth Mother transformed the too eager lovers into lions (Ovid. *Metamorphoses*. 10:4:585).

FROM MYTH TO HISTORICAL EVENTS

Transition from myth to historical record starts with the works of Homer of Chios (c. 900 BCE) and his epic accounts associated with the Trojan War, and concludes with the first historical account and record of the initial Olympiad held in 776 BCE. Homer's accounts of the funeral games in honor of Patroklos, written nearly 3,000 years ago, present a vivid record of athletics during the Heroic Age (Homer. *Iliad*. 23:256 - 24:6). The Achaean heroes at Troy competed in

eight events: archery, boxing, combat (sham close-combat in military gear), discus, horsemanship, javelin, running, and wrestling. Seven of these eight events obviously were military-related, with the discus a curiosity. Homer describes the discus event only as "hurling a lump of iron," and the origin of this event remains obscure (perhaps akin to hurling great stones for distance as at Medieval and modern era Scottish highland games).

SEARCH FOR THE COMPETITIVE EDGE

Inspection of the various available texts reveals that no evidence suggests use by ancient Greek athletes of any specific foods, herbs, or substances to secure any competitive advantage. That said, one might conjecture that ancient athletes and trainers – then as now – experimented with different dietary components, training systems, and behaviors (e.g. eating deer liver and lion heart might convey benefits of speed and strength through the concept of sympathetic magic). While logical, this conjecture is without textual support. This does not mean, however, that competitive advantages could not be attained in other ways, since a significant component of athletic ability is due to genetics, diet, training, and what might be called "x" factors. Let us consider these each in turn.

Genetics

Ancient Greek trainers selected athletes based upon aspects of strength, size, and speed. Body shape or configuration also figured in matching athletes to specific events. Athletes who possessed such specific event-related characteristics, would have had an advantage over other competitors as suggested by these passages:

Overall Athletic Excellence: *Athletic excellence is defined in terms of strength, size, and speed, for to be swift is to be strong. One who can move his legs rapidly and in long strides makes a good runner. One who can grab and grapple makes a good wrestler. One who can thrust away his opponent by a blow of the fist makes a good boxer. One who excels in both boxing and wrestling makes a good pankratiast [i.e. combination event of boxing and wrestling]. But he who excels in everything is fit for the pentathlon [five-part contest: consisting of akon (javelin), diskos (discus), halma (jump for distance), pale (wrestling), and stadion (sprint of approximately 200 meters)] (Aristotle. Rhetoric. 1361B).*

Running: *The best candidate for the dolichos [long foot race of 24 lengths of the stadium at Olympia, nearly 5,000 meters] should have a powerful neck and shoulders like the candidate for the pentathlon, but he should have light, slender legs like the runners in the stadion [short footrace of 192.27 meters at Olympia]. The entrant in the hoplitodromos [short foot race in armor twice the length of the stadium at Olympia, approximately 400 meters] should have a long waist, a well-developed shoulder, and a knee tilted upward in order that the shields may be carried easily (Philostratos. On Gymnastics. 32-33);*

Boxing: *The boxer should have a long hand and strong forearms and upper arms, broad shoulders, and a long neck. Thick wrists strike harder blows. He should have solid hips for support since the thrust of striking out will unbalance him if his body is not set upon firm hips. Fat calves are worthless in every sport, especially in boxing. The*

best boxer has a small belly, is nimble, and has good wind. A big belly will give some advantage to a boxer, for it will get in the way of the opponent who is striking for the face (Philostratos. On Gymnastics. 34);

Wrestling: *The neck should be upright and the throat should come down to the collarbone on either side. The shoulders should be drawn together and the tops of the shoulders should stand up straight; this contributes size to the wrestler. The better chest is prominent and protruding. The lower abdomen should be drawn in and should rest upon thighs that are not hollow but well rounded. Such thighs press together and are adequate for everything in wrestling, and pressed together they give pain rather than receive it (Philostratos. On Gymnastics. 35);*

Pentathlete: *The pentathlete should be heavy rather than light, and light rather than heavy. He should be tall, well built, with good carriage, and with musculature which is neither superfluous nor inadequate., His legs should be long, his hops flexible and limber for the backward bending of throwing the javelin and the discus, and for the long jump. It is necessary that his hands and fingers be long (Philostratos. On Gymnastics. 31).*

Family Wealth and Diet During Childhood

Elite competitors in ancient Greece contributed little to the overall growth and economic development of their respective homes or city-states. Their "employment" was training: their results were either victories or defeats. One may deduce, therefore, that most athletes in antiquity were from wealthy families. Wealth would have allowed the support of athletic training of sons (and sometimes daughters). Wealthy parents would have fed their children a significantly different diet compared to diets of the poor, and such dietary patterns during childhood and adolescence may have included more meat and high-protein foods such as legumes, thus providing an underlying basis for an advantage in size and muscular development to these children of wealthy families who trained as athletes.

In regard to genetics, no demographic data are available to document stature of ancient Greek athletes. General terms such as "large, tall, heavy" abound in text descriptions but are not precise. There are, however, data on the stature of non-athletes from the Iron-Age Mycenaean period (the era of Homer's Heroes), when adult food patterns primarily were cereal-based and consisted of emmer wheat and barley prepared as porridge or bread, and the overall diet was low in calories, protein, and iron (Grivetti, 2001). Skeletal analysis of 345 burials at Mycenae revealed that adult males (n = 191) averaged 167 cm. in height, while females (n = 154) averaged 160 cm. A complementary forensic sample from urban Greek burials of the Classic period reported even shorter stature: 162-163 cm for males, and 153-154 cm for females (Angel, 1946; Bisel and Angel, 1985).

Family origins and access to better dietary patterns due to parental wealth could have established the physiological foundation for a competitive advantage during athletic competition later in adolescence and young adult years. There were relatively few elite athletes among the poor, except for those who participated in local foot-races (Golden, 1998, p. 160).

Diet of Athletes

Texts that mention food patterns or diet of ancient Greek athletes are fragmentary and rare. There is a revealing account by Diogenes Laertius of Cilicia who flourished in the early decades of the 3rd century of the Common Era (died 222 A.D.):

Pythagoras is said to have been the first to train athletes on a meat diet. The first athlete he did this with was Eurymenes. Formerly, athletes trained on dried figs, moist cheese, and wheat (Diogenes Laertius. Lives of the Philosophers. 8:12).
[NOTE: Eurymenes of Samos, was awarded the olive crown of victory at the 62nd Olympiad held in 532 BCE; it is not certain, however, which event he won].

This text, however, is confusing. Pythagoras of Samos, the famed philosopher and presumed Olympic victor in either boxing or wrestling, was a vegetarian. He was born in Samos c. 582 BCE and accounts of his life report that he competed at Olympia at the age of 18 in the year 564 BCE (Lempriere and Wright, 1963, p. 537). Inspection of Olympic victor lists reveals that an athlete named Pythagoras of Samos, indeed, was awarded the olive crown at Olympia for boxing, but this achievement was at the 48th Olympiad in the year 588 BCE. If both his birth date record and the Olympic victor list date are correct, this athlete cannot be the philosopher/vegetarian. Three other athletes named Pythagoras won events at Olympia: Pythagoras from Sparta won the *stadion* in 716 BCE; Pythagoras from Mantinea won the boy's *stadion* in 464 BCE; and Pythagoras of Magnesia (possibly Maiandros) won the *stadion* twice in 300 and 296 BCE. Inspection of victor lists for a period of four Olympiads before and after 588 BCE do not show a victorious Pythagoras. It could well be that credit for introducing meat to the diet of athletes was a trainer named Pythagoras – not the noted philosopher. Pausanias, a near contemporary of Diogenes Laertius, suggested that an alternative person should receive credit:

The record of Dromeus of Stymphalos as a long-distance runner was exceptional; he won two victories in the dolichos [long foot-race] at Olympia, the same number in the Pythian games, three at the Isthmian, and five at the Nemian. He is said to have first thought of eating meat as part of his training diet. Until then, the food for athletes was cheese fresh out of the basket (Pausanias. Description of Greece, 6:7:10).

Philostratos flourished after Pausanias and wrote a treatise on athletic training during the late 2nd century early 3rd century CE. He contrasted early and contemporary athletic diet through the years:

These athletes in olden times washed in rivers and springs, learned to sleep on the ground, others on beds made of straw they gathered from the field. Their food was bread made from barley and unleavened loaves of un-sifted wheat. For meat they ate the flesh of oxen, bulls, goats, and deer; they rubbed themselves with the oil of the wild olive. This style of living made them free from sickness and they kept their youth a long time. Some of them competed in eight Olympic games, others for nine; they were also excellent soldiers. They made war a training ground for athletics, and they made athletics a training for military activity (Philostratos. Concerning Gymnastics. 43).

Philostratos also described how athletic-related training and popular attitudes towards athletes had changed through the centuries, how men of his time had become "civilians" instead of soldiers, lazy instead of energetic, soft instead of tough. He lamented:

Since the Sicilian style of fancy food recently has gained popularity; the guts went out of athletics and more important, trainers became too easy on their pupils. Doctors introduced permissiveness. Doctors gave us chefs and cooks to please our palates. They turned athletes into gluttons with bottomless stomachs. Doctors fed us white bread made of ground meal sprinkled with poppy seeds, and introduced the eating of fish, contrary to previous medical practice. They also introduced to athletes the use of pork and a collection of wonderful theories (Philostratos. Concerning Gymnastics. 44).

Athletes in antiquity – as today – did not always adhere to a strict dietary-training regimen and frequently overate. Philostratos described treatments for athletes who on occasion overindulged and consumed more food than desirable:

Those athletes who have eaten too much should be massaged in a downward direction, so that the excess weight may be removed from the important parts of the body. Pentathletes who have over-eaten should practice one of the light events; runners who have over-eaten should not push themselves too much but should take an easy workout, striding out with only a suggestion of hard effort; boxers should spar at arm's length and should dance lightly about as if on air. Wrestlers should practice upright wrestling, but they should also practice falling and rolling (Philostratos. Concerning Gymnastics. 50).

Philostratos also noted that overeating was not the only dietary-related problem that appeared among the elite athletes, but intoxication as well:

An excess of wine in the athletes' bodies requires moderate exercise to bring on sweating. We should not make people in this condition take hard exercise, but we should not excuse them from their workout entirely (Philostratos. Concerning Gymnastics. 51).

Philostratos wrote that overeating and embarking upon a too rigorous training regimen was dangerous, and that trainers needed to be observant of their charges. In one passage he described the untimely death of the Egyptian-Greek wrestler Gerenos of Naucratis who won the wrestling crown at the 247th Olympiad in the year 209 of the Common Era:

Gerenos won at Olympia. For two days afterward he celebrated his victory by drinking, entertaining his friends, and eating fancy food. As a consequence of this unaccustomed way of life, he was short on sleep. On the third day after his victory he came to the gymnasium and told his trainer that his stomach was upset and that he felt terrible in other ways. The trainer lost his temper and was indignant that in breaking training Gerenos had upset the tetrad schedule and in his ignorance the trainer brought about his pupil's death in the middle of the workout by assigning the kind of exercise which he should have had sense enough to avoid (Philostratos. Concerning Gymnastics. 54).

That ancient Greek athletes ate considerable quantities of food was well recognized in antiquity. Some passages appear plausible when compared against food intake requirements of elite athletes of the modern era, but other references clearly were overstatements, as noted in these selected examples gleaned from the writings of Athenaeus of Naucratis:

For all who go in for athletic contests are taught to eat heartily in connection with their gymnastic exercises (Athenaeus. The Deipnosophists. X:413:C);

Are you speaking to a religious deputation, or to contestants? I am speaking to people who eat a great deal, as is the way of men in training (Achaeus, The Games, cited by Athenaeus. The Deipnosophists. X:417:F - X:418:A.

Some texts recognized athletes as gluttons, and described what can only be considered hyper-inflated food intakes:

Theagenes, the athlete from Thasos, devoured a bull all alone [i.e. by himself] (Poseidippus, cited by Athenaeus. The Deipnosophists. X:412:D). [NOTE: Theagenes won two Olympic crowns, one for boxing at the 75th Olympiad in 480 BCE, and the second for the pankration at the 76th Olympiad in 476 BCE];

[Theagenes the athlete is speaking] And on a wager I once ate a Maeonian ox; for my own country, Thasos, could not have furnished a meal to me; whatever I ate, I kept asking for more. For this reason I stand in bronze, holding forth my hand (Poseidippus, Epigrams, cited by Athenaeus. The Deipnosophists. X:412:E);

Milon of Croton used to eat twenty pounds of meat and as many of bread, and he drank three pitchers of wine. And at Olympia he put a four-year-old bull on his shoulders and carried it around the stadium; after which, he cut it up and ate it all alone in a single day (Theodorus of Hierapolis, On Athletic Contests, cited by Athenaeus. The Deipnosophists. X:412:E-F). [NOTE: Milon of Croton, one of the greatest wrestlers of all time, won six times at Olympia. He took the boy's wrestling crown at the 60th Olympiad in 540 BCE, and subsequently won victories in the next five Olympiads (532 – 516 BCE)];

Titormus of Aetolia ate an ox in competition with him [Milon of Croton] at breakfast (Alexander of Aetolia, cited by Athenaeus. The Deipnosophists. X:412:F);

Milon devoured a bull reclining in front of the altar of Zeus [at Olympia] (Phylarchus, Histories, cited by Athenaeus. The Deipnosophists. X:412:F);

Such was Milon, when, when he lifted the weight from the ground, a four-year-old steer, at the feast of Zeus, and on his shoulders he bore the monstrous beast, as lightly as though it were a new-born lamb, through the entire assemblage. And that was wonder enough; but a greater marvel than this, stranger, he wrought before the Pisan altar; for the ox, unbroken to the yoke, that he had carried in the procession, even that ox he cut up and ate all alone (Doreius, cited by Athenaeus. The Deipnosophists. X:412:F - X:413:A);

Astyanax of Miletus, three times victor at Olympia in successive contests in the pankration, was once invited to dinner by the Persian Ariobarzanes, and upon his arrival he promised to eat all the food prepared for all the guests, and actually did so, and the dishes which had been prepared for the nine male guests at the dinner in the house of Ariobarzanes he ate up alone (Theodorus, cited by Athenaeus. The Deipnosophists. X:413:A-C). [NOTE: Astyanax was victorious in the pankration at the 114th – 116th Olympiads (324 – 316 BCE)];

*Herodorus, the trumpeter of Megara, was only three and a half cubits tall [five feet three inches], but strong in his ribs; he would eat six measures of wheat bread and twenty pounds of whatever meat he could find; he would then drink two pitchers of wine [i.e. nearly 6 quarts], and could sound two trumpets at one and the same time (Amarantus of Alexandria, On the Theater, cited by Athenaeus. The Deipnosophists. X:414:F). [NOTE: Herodorus of Megara was the most renowned trumpeter in the ancient world. During a period of 36 years he won crowns at Olympia 10 times in succession from the 113th through 122 Olympiads (328 – 292 BCE). Of even more significance, Herodorus won what was called the "circuit of the games," i.e. at Olympia, Delphi, Nemea, and Isthmia in successive years. Any person who won "the circuit" once, received the honor of being called *periodonikes*. To achieve this feat once was notable; to have done so ten times was nearly unimaginable]; and*

Yes, I can see one of my friends coming towards me from the wrestling-school. It is Damippus. Do you mean that chap, the feather-weight? Himself, whom his friends call today the Thunderbolt on account of his courage, you know. I do not wonder; for he can make the very dinner tables sacred ground, I fancy, by swooping down upon them with his jaw (Anaxippus, The Thunderbolt, cited by Athenaeus. The Deipnosophists. X:416:F - X:417:A).

The Athenian comic poet, Theophilus ridiculed the diets of athletes and the quantity of food they consumed in his play the *Pankration Fighter*, as the following dialogue reveals:

Of boiled dishes there were nearly three pounds' weight.

Tell us more!

A snout, a ham, four pigs' feet.

Heracles!

Three ox-feet, and a fowl.

Apollo! Tell us more.

Two pounds of figs.

And how much did you drink to top it all? A dozen half-pints of wine, neat.

Apollo, Horus, and Sabazius

(Theophilus, The Pankration Fighter, cited by Athenaeus. The Deipnosophists. X:417:B).

Training Systems

Archaeological excavations at various sites provides evidence for the construction of gymnasia, related buildings, bathing facilities, and pools. No information from inscriptions or texts, described how athletes trained or the different systems used by trainers, until nearly 800-years after the 1st Olympiad.

Pausanias, a Roman historian of Greek heritage who lived during the late 2nd century-early 3rd century of the Common Era, wrote that at Olympia, adult male athletes were required to swear to Zeus that "they had adhered strictly to their training for ten successive months" (Pausanias. *Description of Greece*. V:24:9-10). Once the period for the Olympic games had been announced, athletes assembled at Olympia for a 30-day training period in advance of the games, a practice may have served as a filtering mechanism to weed-out the "less proficient" athletes (Golden, 1998, p. 16).

Heralds traveled throughout the Greek-speaking world and "called" the athletes to Olympia. No text to my knowledge described the relative ease or rigors whereby athletes traveled from their homelands to Olympia in order to arrive with sufficient time to reestablish their training regimen and to participate in the games. Based upon comparative evidence from other training facilities, the conjecture may be advanced that the training facilities at the Olympic site were not open year-around, since records for athletic venues at Delphi and Epidaurus report that these sites had to be prepared in advance (Miller, 1991, pp. 63-65). Athletes, however, could arrive several months early, and continue their training at gymnasia within the geographical district of Elis, but not specifically within the Olympic sanctuary until 30 days prior to the start of the games (Pausanias. *Description of Greece*. 6:23-24).

Medical aspects of athletic training appear in the writings of Galen of Pergamum (2nd century CE) who condemned immoderate training regimen. Galen penned an essay on training that incorporated views previously attributed to Hippocrates of Cos, the father of Western medicine. Galen wrote:

Hippocrates said something else which is liked by all: 'Healthy training is moderation in diet, stamina in work.' But athletes overexert every day at their exercises, and they force-feed themselves, frequently extending their meals until midnight. Hippocrates also said 'Excess is the enemy of nature.' But athletes pay no attention to these or others of his wonderful sayings which they transgress, and their practices are in direct opposition to his doctrines of good health. Thus athletes' bodies are in good shape while they are competing, but as soon as they retire from competition degeneration sets in. Some soon die, some live longer, but do not reach old age. Many athletes with well-proportioned limbs are made exceedingly fat by their trainers who take them and stuff them with blood and flesh. Indeed, the faces of some are beat up and ugly, especially of those who have practiced the pankration or boxing. . . But perhaps their strength is good for warfare? Euripides will tell us, for he said no: 'Do men fight battles with diskoi in their hands? They are weaker than newborn babies (Galen. Exhortation for Medicine. 9:14).

Galen wrote a second treatise that suggested two points: exercise – like all things – should be in moderation, and that training should be based upon finesse. He strongly argued against running as a component of a training regimen, and wrote that serious athletes should shun this activity because running overworked specific parts of the body but left other areas (i.e. muscle groups?)

untrained. Galen recommended an approach to athletic training through ball-related exercises, and claimed that if this technique was followed then all body parts would be exercised equally:

The best philosophers and the best doctors among the ancients have frequently stated how beneficial exercise is toward health, and that it must precede eating. I say that the best exercises are those which not only exercise the body but are able to please the spirit. Play with a small ball is so much a people's activity that even the poorest man is able to have the equipment such exercise needs neither nets nor weapons nor horses nor hunting dogs, but only a ball, and a small one at that. This kind of exercise is the only one which moves all parts of the body so very equally. Many other exercises achieve an opposite effect: they make people lazy and drowsy and dull witted. Many athletes who work out at the palestra [school for wrestling] tend toward being muscular rather than toward the pursuit of excellence. Many have become so weighed down that they have difficulty breathing. Perhaps you will suppose that I recommend running and other exercises that slim down the body. That is not the case. I assert that every exercise should be practiced in moderation. Accordingly, I do not approve of running by which people slim their bodies and thereby they gain no practice or manly spirit. Victory does not go to those who flee quickly but to those able to persevere in confrontation. If you should ask how healthy running is, the answer is that in the same measure that it unequally exercises the parts of the body, it is unhealthy. For by definition running has to overwork some parts and leave others utterly idle. Neither of these is good, and both nourish the seeds of diseases and render one's forces feeble. Accordingly, I approve of exercise which produces a healthy body and a balance between the various parts of the body, and along with that a fine spirit. This is what arises from exercise with a small ball. Leaping upward has already destroyed many by rupturing a main blood vessel. Riding horses has often broken organs around the kidneys and the chest. So also for jumping, for the diskos, and for exercises involving bending. Exercise with a small ball entails no danger and should appear to be of all activities the best suited for one's benefit (Galen. On Exercise with a Small Ball. 5: 899-910).

Lucian of Samosata provided specific training recommendations. He suggested that athletes run in sand, jump ditches, and carry lead weights as they completed their workout schedules. Lucian also recommended combinations of distance and speed work:

We train young men to run, getting them to endure long distances as well as speeding them up for swiftness in the sprints. This running is not done on a firm springy surface but in deep sand, where it is not easy to place one's foot forcefully and not to push off from it, since the foot slips against the yielding sand. We train them to jump over ditches or any other obstacles and we train them to do this even when they carry lead weights as large as they can hold (Lucian. Anacharsis. 27).

Philostratos described training that combined endurance running, lifting weights, and exercise that included wrestling with beasts, especially lions. His approach would be what we today in the 21st century call "cross training:"

Some athletes in the past trained by carrying heavy weights, others by chasing hares and horses, or by bending and straightening thick rods of wrought iron. Others yoked themselves with strong oxen to pull wagons, or bend back the neck of bulls, and some did the same with lions. The boxer Tisander from Naxos used to swim around the headlands of his island and went far out to sea using his arms, which in exercising the rest of his body also received exercise themselves (Philostratos. Concerning Gymnastics. 43). [NOTE: Tisander from the island of Naxos won olive victory crowns at four Olympiads, the 52nd through 55th (572 – 560 BCE)].

Philostratos described the traditional Greek athletic training system as a four-day cycle of hard-easy days called the *tetrad*:

By the tetrad we mean a cycle of four days, each one of which is devoted to a different activity. The first day prepares the athlete, the second is an all-out trial; the third is relaxation; and the fourth is a medium-hard workout. Exercise of the first day is made up of short, intense movements that stir up the athlete and prepare him for the hard workout to follow on the next day. This strenuous day is an all-out test of his potential. The third day employs his energy in a moderate way, while on the day of the medium workout [or last day], the athlete himself practices breaking holds and preventing his opponent from breaking away (Philostratos. Concerning Gymnastics. 47).

The *tetrad* system of hard vs. light workout-days, was not designed to be inflexible. Philostratos observed that some trainers were strict and did not take into account variables in their athletes' condition:

While the athletic trainers are following this fixed routine of the tetrad, they pay no attention to the condition of the athlete they are training, even though he is being harmed by his food, his wine, the secret snacks he eats, mental strain and fatigue. How can we prepare such an athlete by a schedule of tetrads (Philostratos. Concerning Gymnastics. 47)?

Some passages raise the tantalizing issue that training too hard during adolescence, could have led to "burn-out" and/or to the inability to make the successful transition to adult level athletic competition. Also inherent in some texts is the interesting view that excessive exercise also could stunt growth:

Until puberty lighter exercises should be applied, and forced diets and required work efforts should be forbidden in order that there be no impediment to growth. There is proof that such training can stunt growth. In the list of Olympic victors one can find only two or three who have won in both the boys' and men's categories. The strength of those who train too hard in youth is robbed by the required exercises. When the boys have spent three years after puberty on other lessons, then it is proper that the next period of their lives be spent on exercises with the required diets (Aristotle. Politics. 1339A).

The type of resistance training achieved through weightlifting, and commonly attributed to the legendary champion wrestler Milon of Croton, lies more in the realm of mythology than reality. Ancient authors have claimed that Milon developed his enormous strength by the unusual

technique of lifting a recently delivered calf, and then repeating the lift each day as the calf matured. Accounts state that Milon reveled in demonstrating this lifting feat, and that he could carry the adult bull with ease. While clearly an athlete of unusual strength and prowess, Milon was not highly intelligent. One tradition passed from antiquity to modern times holds that while walking near his home city of Croton in what is now southern Italy, Milon came upon a partially split tree where woodsmen had abandoned their wedges deep inside the crack. The idea somehow came to Milon that he should put his two hands together inside the crack and attempt to split the tree himself. Tradition holds that he did so, and as he exerted the lateral pressure, the wedges fell out, whereupon the two parts of the tree trunk sprang back trapping his hands. Thus immobilized (as the story goes), Milon was defenseless, and ultimately was attacked by wolves and devoured (Athenaeus. *The Deipnosophists*. 10:412:F; Pausanias. *Description of Greece*. 6:145; Quintilian. *Institution of an Orator*. 1:9:5).

Negative Behaviors

It was widely recognized in antiquity (and today) that competitive advantages could be obtained through "dark ways," methods by which athletes could obtain an "edge" through bribery, deceit and trickery, purposeful injury of opponents, or through fear and intimidation.

Philostratos claimed that the Olympic games were "[pure and] inviolate in accordance with their ancient glory," but he also described how athletes achieved victory through bribery at other athletic venues:

*A boy won the wrestling at Isthmia by promising to pay [perhaps the equivalent of US \$24,000] to his opponent. When they went into the gymnasium on the next day, the loser demanded his money, but the winner said that he owed nothing since the competitor had tried after all to win. The loser then swore in public that he had sold Poseidon's contest, and that the two had agreed upon a price of [c. \$24,000]. The fact that this was told in front of witnesses may make it more truthful, but also all the more sacrilegious and infamous; he swore such an oath at Isthmia before the eyes of Greece. . . I do not absolve the athletic trainers of blame for this corruption. They come to do their training with pockets full of money which they loan to the athletes at interest rates which are higher than business men have to pay who hazard sea trade. They care nothing for the reputations of the athletes, but give advice about the sale or purchase of a victory (Philostratos. *Concerning Gymnastics*. 45).*

As the number of competitors and the talent pool expanded, quality athletes encountered more difficult competitors. With less time and motivation for training, the dark side of athletic bribery became more evident:

*Their luxurious way of living stimulated the sex urge and the athletes began to engage in illegal transactions of money, buying and selling victories (Philostratos. *Concerning Gymnastics*. 45).*

A second person named Philostratos, perhaps the son-in-law of the Philostratos who wrote the treatise on gymnastics (Miller, 1979, p. 28), considered the dual themes of deceit and trickery and described three events, boxing, *pankration*, and wrestling, as essentially "wide open" in the sense of allowable low blows and strangulation:

The pankratiasts practice a dangerous brand of wrestling. They have to endure black eyes and learn holds by which one who has fallen can still win, and they must be skillful in various ways of strangulation. They bend ankles and twist arms and throw punches and jump on their opponents. All such practices are permitted in the pankration except for biting and gouging, but even the Spartans permit this because they are training for battle (Philostratos. Pictures in a Gallery. II:6).

Injuring an opponent on purpose, even striking deathblows, was part of athletic competition in ancient Greece where the concept of "victory at any price" sometimes ruled. Pausanias described an incident at the Nemean Games where the boxer Kreugas was awarded the victory – although he had been killed. Kreugas' opponent, Damoxenos of Syracuse, had landed a foul blow under the rib cage, a punch that actually penetrated the intestinal cavity. Damoxenos, reportedly, grabbed Kreugas' intestines and pulled them out, whereupon Kreugas died "on-the-spot." The judges disqualified Damoxenos and a victory statue ultimately was raised to the memory of Kreugas at his home city of Argos (Pausanias. *Description of Greece*. 8:40:1-5).

Deceit and poor sportsmanship were also part of athletic competition. Lucian posed the following question for consideration: what should runners do at the start of the race? In his response, Lucian differentiated between quality and poor athletes:

Immediately the starting mechanism has fallen the good runner thinks only of what is in front of him and stretching his mind toward the finish line and putting his hope of victory in his feet, he does not plot against the fellow next to him nor even consider his competitors; but the bad runner and worthless competitor has no hope in speed but only in tricks and he thinks only of how he might hold up or trip his competitor, believing that this is the only possibility of winning. (Lucian. On Slander. 12).

Fear and intimidation reigned at the 211th Olympic games in 65 CE when the Roman Emperor Nero attended and competed.

Nero took part in the chariot racing on several occasions, and at Olympia he drove a 10-horse team, a novelty that had been added to the festival just for him. However, he lost his balance and fell out of the chariot and had to be helped into it again. Nonetheless, even though he did not run the whole race and quit before the finish, the judges awarded him the crown of victory (Suetonius. Nero. 22-24). [NOTE: Nero won six victor wreaths at Olympia during the 211th Olympiad in 65 CE. His "victories" were: chariot race (undifferentiated by number of horses on the victor list); 10-horse chariot race; foals chariot race; herald's competition; tragedy competition; and lyre-playing competition].
It obviously did not pay to upset the maniacal Nero.

Psychology

Athletes at Olympia were divided into only two categories: boys and men. Heats and early rounds were not managed/sorted by size or weight. Imagine, therefore, the psychological intimidation factor that a previous Olympic champion like Milon of Croton would have exerted over a novice wrestler, as the younger, less experienced man stepped onto the wrestling pit in the early competitive rounds. Milon of Croton – a renowned hero who already had won six victors' crowns of olive – would have gazed confidently across the "ring" into his opponents' eyes, would

have either smiled or scowled (would it have mattered?), and then would have strode across the floor to meet the young challenger. Would not such previous champions clearly possess powerful psychological competitive advantages over their opponents?

Observational Skills

Hardened, experienced athletes in antiquity (as today) sometimes could obtain a competitive advantage over their opponents through keen observation. Philostratos identified several visual cues that helped a evaluate an opponent's level of physical fitness and training, and how to put these observations to good use:

You can recognize an athlete who overeats by his thick eyebrows, gasping breath, and prominent collarbones, as well as rolls of fat around his waist. Those athletes who drink too much wine have an excessive paunch and too much drinking is discovered by a fast pulse (Philostratos. Concerning Gymnastics. 48).

Pain Management

No ancient Greek texts confirm use of medicinal balms, draughts, or lotions by athletic trainers in antiquity, and no records identify specific compounds that could have been used to manage pain. Alcohol (i.e. wine) would have been available, but overindulgence by athletes was not recommended. Opium would have been available, but there is no evidence for use.

An athletes' ability to subvert and manage pain during the course of competition has been a challenge from remote antiquity into the 21st century, and sometimes made the difference between winning and losing as noted in this text by Lucian:

The crowns cannot be acquired without pain, and the man who wants one must endure many hardships in the beginning before he can even start to see the profitable and sweet end of his efforts (Lucian. Anacharsis. 9:14).

Desire, perseverance, and drive each are immeasurable, and each component contributes to winning. Do we not marvel still today at the extraordinary accomplishment of Billy Mills in the 10,000-meter race at the Tokyo Olympiad? Can any who witnessed his victory in person, or who has watched on film have any doubt about the pain that he suffered, can any question his desire and perseverance, and is there any doubt of the immeasurable inner strength that he demonstrated in achieving his Olympic victory? Can anyone ever begin to understand how Mr. Mills subverted the pain of those last laps and the pain that needed to be overcome before his final drive to the tape and Olympic victory (Applegate *et al.*, 1997)?

Aelian, a writer from the early 2nd century CE, described pain management in an unusual text that revealed how important it was for athletes to not let their opponents know that they suffered, or that they were injured:

Eurydamas of Cyrene won the boxing, even though his opponent knocked out his teeth. To keep his opponent from having any satisfaction, he swallowed them (Aelian. Various History. 10:19). [NOTE: Eurydamas of Cyrene appears on the Olympic victors list as a

boxer. Unfortunately, the Olympiad and year are not legible. We may conclude only that Eurydamas won his event prior to Aelian's text].

Epictetus, a philosopher of the 1st-2nd century A.D., directed a telling passage to ancient athletes who aspired to be Olympic champions, a message that has stood the test of time and one that might be heeded by modern athletes as well, especially those who would aspire to be Olympic champions in 2004 or in future Olympiads:

You say 'I want to win at Olympia.' Look at what is involved both before and after, and only then, if it is to your advantage, begin the task. If you do, you will have to obey instructions, eat according to regulations, keep away from desserts, exercise on a fixed schedule at definite hours, in both heat and cold; you must not drink cold water nor can you have a drink of wine whenever you want. You must hand yourself over to your coach exactly as you would to a doctor. Then in the contest itself you must gouge and be gouged; there will be times when you will sprain a wrist, turn your ankle, swallow mouthfuls of sand, and be flogged. And after all that there are times when you will lose. And you still say, 'I want to win at Olympia' (Epictetus. Discourses. 15: 2-5).

Hydration Management and Balance Between Rest and Relaxation

With exception of the *dolichos* (a long distance race introduced at the Olympics in 720 BCE), all events at Olympia required quick anaerobic energy expenditures. Most events were of short duration, although some boxing, *pankration*, and wrestling pairings could have resulted in extended matches. A question may be posed whether or not adequate or inadequate hydration could have played a role in athletic success at Olympia and at other athletic venues? Examination of 50-year temperature and humidity records for Corinth/Isthmia, Delphi/Itea, and for Olympia reveal the following data (information provided by Professor Antonis Zampelas, Harokopio University, Athens):

TEMPERATURE (C):

	June	July	August	
Delphi	20	25	25	
Isthmia		24	27	28
Olympia	22	25	26	

HUMIDITY (%)

	June	July	August	
Delphi	48	45	48	
Isthmia		60	55	55
Olympia	72	65	60	

Unseasonable summer rains also would have been characteristic at the Olympic site. Based upon modern 50-year values for Olympia, more rainfall would have occurred in the month preceding the games (15 mm) than during either July (7mm) or August (12mm).

Given these physical weather-related data, and given the rigors of athletic training at Olympia, one may pose the question whether or not specific athletes could have obtained competitive advantages through dehydration management? No texts from antiquity, to my knowledge, consider the importance of remaining hydrated, or comment upon the water and drinking needs of athletes. Still, there are tantalizing references in several passages that certain procedures/behaviors were employed to reduce sweating.

Especially identified as effective in reducing sweating was the practice of anointing the body with oil, especially oil of myrtle, or smearing the body with the juice of berries from *Pistaschia lentisca* (Dioscorides. *Herbal*. 1:29-30, 1:48, 1:50). Dioscorides also recommends that "those who exercise" [he did not use the specific word athletes] should drink concoctions of rosemary (*Rosmarinus officinalis*) since these leaves were thought to provide a warming property to the body (Dioscorides, *Herbal*. III:89).

The Olympic games began on the "second full moon after the summer solstice, in the months of July or August" (Miller, 1978, p. vii). The games would have been conducted at the peak high temperature period at Olympia (25.3–26 degrees), but with slightly lower humidity averages compared to June (72% vs. 60-65%). Athletes would have arrived at Olympia at least one month earlier, and would have trained under conditions of high heat and humidity. Athletes, for the most part, drank only two beverages: wine and water. Drinking wine, diluted with water as was the custom, would have further dehydrated the athletes, while local water sources – not from bubbling springs – would have been subject to potential bacillary contamination. On the other hand, it might be argued that the Greek tradition of mixing water with wine – albeit with the intent of diluting wine's intoxicating properties – may have produced a modest bactericide effect, and could have been helpful to certain athletes given the uncertain hygienic conditions that probably prevailed at Olympia.

Regarding access to water and to food, Olympia was a difficult location for both athletes and spectators alike as noted by Epictetus:

There are unpleasant and difficult things in life. But do they also not happen at Olympia? Do you not suffer from the heat? Are you not cramped for space? Do you not bathe badly? Do you not get soaked whenever it rains? Do you not get your fill of noise and shouting and other annoyances? But I suspect that you compare all this to the value of the show and that you endure it (Epictetus. Discourses. 1:6:23-28).

Travel to Olympia was "daunting" because of its rural, remote location, the temperature was hot, facilities on site were uncomfortable, and for at least the first 500 years of the games accommodations and food procurement opportunities for visitors as well as athletes were poor (Golden, 1998, p. 108).

Given these conditions, the conjecture may be raised whether or not local athletes from Elis could have had a competitive advantage/edge over Greek athletes from other geographical localities, because they already were acclimatized to local food, water, and weather conditions, and did not have to undergo rigorous travel, compared to other competitors who left their homelands months in advance, who traveled on foot for at least part of the journey, and who arrived at Olympia, perhaps exhausted, and with their training interrupted.

Inspection of Olympic victor lists reveals the interesting point that the greatest number of Olympic victors were indeed from the city of Elis or from the geographical region administered by Elis (121 victors), followed by "home/geographical area unknown," a designation required because of unreadable gaps in the victor's list (89 victors). Spartans (78 victors) would have walked/rode. Other geographical sites from which athletes probably walked or combined walking with trans-gulf short voyages would have included: Athens (43 victors), Argos (21), Sikyon (20), Corinth (12), Macedonia (10), Epidauros (5), Delphi (4), and Patras (3). Athletes from all locations within Egypt (62 victors) and representatives from all locations within Sicily (61 victors) would have arrived at Olympia relatively rested, having crossed the Mediterranean by ship. The success of athletes from Elis who clearly received the greater share of Olympic olive crowns, lends support to the contention that these elite athletes had a competitive edge.

Potential "X" Factors

From the vantage point of the 21st century knowledge, speculation also may include additional factors that could have provided competitive advantages to some athletes.

Plants With Potential Healing Properties

A series of passages by Dioscorides recommended applications of different types of soils and plants to reduce soreness/swelling of nodes and joints. While these texts do not state specifically that these were used by athletes, the conjecture can be advanced that clever athlete trainers would have known of such approaches to treating their charges. Among the products recommended were: dust from the floor of a wrestling school (Dioscorides. *Herbal*. I:35), and concoctions smeared on the body where the active ingredient was henbane (*Hyoscyamus niger* or *H. albus*) (Dioscorides. *Herbal*. IV:69).

Theophrastus identified the collective properties of herbs grown in the geographical vicinity of Thrace, that when applied to cuts, would staunch the flow of blood (Theophrastus. *Enquiry Into Plants*. IX:15:3), but made no direct linkage between this passage with the training and care of athletes.

Plants With Potential Stimulate Properties

Could trainers have urged use of specific plants for their presumed stimulate or endurance properties? While no textual evidence supports this conjecture, such a presumption is logical given doping-related suggestions by athletic trainers of the past 100 years. Mediterranean flora abounds with numerous species that when diluted or attenuated and consumed, could have provided modest to powerful physiological effects, among them: darnel, hellebore, various mushroom species, nightshade, pennyroyal, and purslane (see Theophrastus. *Enquiry Into Plants*. IX: 15: 1-8 through IX:16: 1-9)

Plants Used as Magical Charms

Beyond the identification and possible use of plants that could have provided physiological effect lies the realm of magic and amulets. There is an unusual passage by Theophrastus that identified the presumed magical properties of certain species of plants and how their use could assure fame and recognition. :

What is said of amulets and charms in general for the body or the house. . . they say that the plant called snapdragon [αντιρρινον] produces fair fame. This plant is like bedstraw but it has no root: and the fruit has what resembles a calf's nostrils. The man who anoints himself with this, they say, wins fair fame. . . Such tales proceed from men who desire to glorify their own crafts (Theophrastus. Enquiry Into Plants. 9:19:2-3).

While scientists do not believe in magic and charms, there remains even today in the 21st century wide-spread use today of amulets by athletes at the modern Olympic games (i.e. lucky dolls; lucky socks/shoes; lucky religious medals). There are also the beliefs held by many elite athletes that certain repetitive behaviors (i.e. not stepping on lines; stepping onto the competition floor with the right foot first and never the left first; other unusual pre-event rituals and pre-event dietary behaviors) lead to athletic success. One may conjecture, too, that such behaviors also may have been common in antiquity. Perhaps some athletes at Olympia, Delphi, Nemea, Isthmia, or elsewhere sought out and picked sprigs of snapdragon, then smeared the juice over their bodies for good luck? Perhaps they would have smelled better too.

Diet and Muscular Repair

Given the vantage point of 20th and 21st century science, might the inclusion of local foods with high antioxidant content provided some athletes with an advantage? The *tetrad* training system of hard vs. easy days, one not dissimilar to "rest and repair" training concepts voiced today in the 21st century, would have led to "stress-adaptation" patterns for muscular development. Ability to respond and repair more quickly could have been facilitated by the inclusion of common Mediterranean foods diet high in antioxidants especially citrus, herbs/spices such as oregano/thyme, and grapes (Matala *et al.*, 2001). This speculation, however, is not supported by inscriptions or texts at this time.

Remaining Injury Free

Another issue would be relative susceptibility to illness vs. ability to stay healthy during training and competition. Elite athletes of the past two centuries (and presumably in the past) have walked a narrow tightrope between success and failure, where muscles, bones, and tendons are stressed/relaxed, where excessive training may cause athletes to break down during training. Several passages describe serious injuries to athletes and even deaths during training as the following passages reveal:

A pankratiast named Sostratos had the nickname of Akrochersites [i.e. fingerman] because he would grab his opponent by the fingers and bend them and not let go until his opponent surrendered. He won twelve victories at Isthmia and Nemea combined, three at Olympia, and two at Delphi

(Pausanias. *Description of Greece*. VI:4:1) [NOTE: Sostratos of Sikyon of Sikyon won the pankration at the 104th through 106th Olympiads in 364-356 BCE];

*Arrhachion the pankratiast was fighting with the last remaining of his opponents for the olive branch. His opponent, whoever he was, got a grip first and held Arrhachion with his legs squeezed around Arrhachion's midsection and his hands squeezing around his neck at the same time. Meanwhile, Arrhachion dislocated a toe on his opponent's foot but was strangled and expired. At the same instant Arrhachion's opponent gave up because of the pain in this toe. The Eleans [i.e. judges from Elis] proclaimed Arrhachion the victor and crowned his corpse (Pausanias. *Description of Greece*. VII:40:1-5). [NOTE: Arrhachion of Phigaleia, was three-times victor in the pankration at the 52nd through 54th Olympiads in 572-564 BCE. The death of Arrhachion, therefore, was at the 54th games in 564 BCE];*

[Father speaking at his son's trial] The result has not been what I had thought it would be. My son, not because of insolence or mischief, but because he was practicing the javelin with his fellow athletes in the gymnasium, did hit someone, but killed no one if the truth would be known. He has been blamed for the mistake of another. My son would have caused the boy's death had the javelin struck the boy outside the area marked for its flight. But the boy ran into the path of the javelin and thus put his body in its way. Hence, my son was unable to hit the mark for which he had aimed, and the boy was hit because he ran under the javelin. The running into the path of the javelin was the cause of the boy being hit, and my son is unjustly accused. It should be quite clear to you [i.e. the judges] that he was killed because of his own error. The boy who was hit paid the price of his mistake and has already received justice which causes us no joy, but rather sympathy and sorrow (Antiphon. Second Tetralogy. 2).

Remaining Free from Illness or Disease

There is an unusual text by Theophrastus that states athletes who practiced at the wrestling school at Beotian Thebes commonly suffered from intestinal parasites, specifically flatworms, a malady treated using a decoction prepared from roots of the male-fern:

*Of male-fern no part but the root is useful and it has a sweet astringent taste. It expels the flatworm (ελμινθα). It has no seed nor juice, and they say it is ripe for cutting in autumn. This worm naturally infests certain races: speaking generally the following are liable to it – the Egyptians, the Arabians, the Armenians, the Matadides, the Syrians, the Cilicians. The Thracians have it not, nor the Phrygians. Among the Hellenes, those Thebans who frequent wrestling-schools and the Boeotians generally are liable to it. But not the Athenians (Theophrastus. *Enquiry into Plants*. IX:20:5).*

Evidence also suggests that Olympia was not a very sanitary site in antiquity. Germ theory, of course, did not exist in antiquity and Greek concepts of illness were based upon a humoral model that stressed balance between hot and cold/wet and dry concepts (Grivetti, 1991). Accordingly, there would have been no recognition or association between relatively poor sanitation, contaminated water, and disease outbreaks.

Athletes and visitors to Olympia could have accepted or rejected local water supplies (e.g. cisterns, drainage channels, and wells) based upon visual inspection for relatively cleanliness, and for perceived qualities of clarity, odor, and taste. It may have been that the water sources, channels, and containers used by athletes and visitors to Olympia were polluted/contaminated, and the custom of mixing wine with local water sources might have been a behavior that could have provided a health "edge" some competitors over others who drank only water.

Olympia also may be considered as a "central place" in an epidemiological context, where people from widely distant geographical areas gathered for viewing and for competition. Such "central places" – then and today – serve as focal sites for potential disease/illness transmission because of the density of the people at one locality. Consider the problem if a visitor or athlete appeared at the Olympic site who was infectious? While no athletic-related texts or other evidence that suggests illness among athletes or those attending the games, the probability would have been high, and on occasion, an in-gathering of athletes and visitors might have been relatively dangerous.

Between 430-423 BCE the Athenians suffered seven years of plague. The plague outbreak at Athens encompassed the 88th and 89th Olympiads (BCE 428-424), when nine victors were crowned. No Olympic-related inscription or text of these dates provides any insights as to the deaths and horror taking place in Athens just 200 miles east of Olympia. Considering the victor lists for these two Olympiads, none were from Athens: five represented athletes from overseas locations (Magnesia, Rhodes, and Sicily), two from Sparta south of Olympia, one was a local winner from Lepreon (a town in Elis), and the geographical location of one victor is not known.

Athletes who assembled at Olympia every four years (as with the athletes who will assemble in Athens in 2004), will be faced with potentially volatile health-related situations whereby air- and water-borne diseases easily were and can be spread. And in antiquity, athletes from Elis, where the Olympic sanctuary was located, who were well trained in advance of arrival, who had not experienced rigorous, difficult travel, who were well nourished, and who probably mixed water with their wine, could have had a competitive advantage over other athletes.

CONCLUSION

Athletic success can be predicated upon a blend of genetics, training regimen, diet, and intangibles that may be called "x" factors. But what part and what percentage each played in producing Olympic champions in antiquity cannot be determined. We may speculate on genetics, training, and diet, but it may well be that as today in the 21st century, the intangibles of motivation, desire, and ability to manage the pain of competition made all the difference between winning an olive crown at Olympia and being recorded on the victor lists, or fading into

obscurity. It is appropriate, then to return to the passage by the Greek philosopher, Epictetus, that addressed athletes who would aspire to be Olympic champions:

You say 'I want to win at Olympia.' Look at what is involved both before and after, and only then, if it is to your advantage, begin the task. If you do, you will have to obey instructions, eat according to regulations, keep away from desserts, exercise on a fixed schedule at definite hours, in both heat and cold; you must not drink cold water nor can you have a drink of wine whenever you want. You must hand yourself over to your coach exactly as you would to a doctor. Then in the contest itself you must gouge and be gouged; there will be times when you will sprain a wrist, turn your ankle, swallow mouthfuls of sand, and be flogged. And after all that there are times when you will lose. And you still say, 'I want to win at Olympia' (Epictetus. Discourses. 15: 2-5).