The Myth of the Muscle-Bound Lifter

By Terry Todd

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Preface: The founding of the National Strength Coaches Association (NSCA) in the late 1970s launched the strength coaching profession and created new publishing opportunities for those interested in the academic study of strength. As an early member of the NSCA and strong supporter of its goal of helping strength coaching become recognized as a true profession based on scientific knowledge, Terry was also an early contributor to the NSCA Journal *and was the first person to publish a historical article in it. In 1984, he authored "Karl Klein and the Squat," an article that helped debunk Professor Klein's research on the knee and squatting—research that caused many coaches and physical educators to suggest that squats were dangerous and should be avoided* (NSCA Journal *6, no. 3 [June 1984]: 26-31.)*

The following year, Terry published this article on the origins of the myth of muscle-binding. It was particularly satisfying for him to see this research in print, as Terry's athletic career—and later life—had been so deeply impacted by the long-held belief that lifting weights would hinder athletic performance. (I've retained the original footnote formatting used in the journal for this article.) *~ Jan Todd*

Although evidence exists (10, 30, 31) that resistance training was practiced in many early cultures, it was applied both variously and vigorously in the development of physical prowess for athletes and warfare during the classical period both in Greece and also the Roman Empire (9, 10, 21).

The most famous athlete of that era was the sixth century, B.C. wrestler, Milo of Crotona, who had a prime which lasted nearly 30 years, during which he was wreathed six times at Olympia, seven times at Pythia, nine at the Nemean Games and ten at the Isthmian (33). Milo is reputed to have regularly carried a heifer across his back and shoulders as it grew to maturity—until he could finally walk with it—in order to progressively strengthen himself (21).

Nor was strengthening exercise limited to such crude approaches; the physician Galen, in fact, describes in detail many ancient strengthening exercises as well as how the Greek hand weights—called *halteres* and employed first in jumping—came to be used in much the same way as we use dumbbells today (9). As for the Romans, they continued many of these exercises, although their aim was always more rigidly utilitarian and aimed at success in battle. Gladiatorial training, for example, often included the overload principle in the form of chopping at a wooden post with swords much heavier than those used in actual combat (8).

But with the fall of the Roman Empire, the philosophy of Christian asceticism, in which the body was considered fit only for contempt and battle, achieved a prominence that was to last for a thousand years. Writings such as Galen's *De Sanitate Tuenda* were preserved, however, and as early as 1531, Sir Thomas Elyot referred to the ancient exercises:

> Teaching such exercises as may be used within the house as . . . laboring with poises [weights] made of lead or other metal called in Latin *alteres* (sic), lifting the heavy stone or bar . . . and divers sembable exercises, (Elyot 1962, pp. 59-60).

During the Renaissance, writers such as Camerar-

ius (14) and Montaigne (19) continued to refer to the use of resistance training as a way to improve health, strength and, by extension, dominance in combat. These attributes crossed the Atlantic at least as early as 1786, during which year the octogenarian Ben Franklin, who had by then lifted for at least 14 years (26), wrote to a friend, saying, "I live temperately, drink no wine, and daily use the exercise of the dumb-bell," (Van Doren 1938, p. 743).

Gradually, then, as more people began to have a bit of spare time for exercise and sports, other inventive minds in addition to Franklin's turned their attention to training. One of the most influential of these was George Barker Windship, who began his lifting career while a student at Harvard Medical School and went on to become an active proselytizer for the benefits to be had from progressive resistance, particularly for a form of partial deadlift he called the Health Lift.

> I was nearly seventeen years of age before I seriously undertook to improve my physical condition. I was then but five feet in height and a hundred pounds in weight. I was rather strong for my size but not strong for my years and my health was not vigorous. I am now 26 years of age, five feet seven inches in height, and one hundred and forty eight pounds in weight. My strength is more than twice that of an ordinary man, and my health is as excellent as my strength, (Windship 1860, p. 129).

Another American pioneer lifter was William Buckingham Curtis, who was later to become one of the founders of both the New York Athletic Club and the Amateur Athletic Union. The 5'7", 165-pound Curtis was a real all-rounder, being capable in 1859 not only of "putting up from the shoulders to full arms' length above the shoulder two dumbbells at the same time, one in each hand, each weighing 100 pounds," (Spaulding 1923, p. 67), but also of excelling in many other forms of athletics, such as sprinting, long jumping, skating, swimming, single sculling and throwing the hammer (31).

This fortuitous combination of weight training and athletics continued as the twentieth century began, and the use of weights as a means of improving performance in other sports began to be more and more frequently recommended. Yet, those who championed the weights found themselves in the position of having to defend lifting—as Albert Attila does here—from an ominous, growing tide of criticism:

> Many attacks have been made on weightlifters as being slow . . . [but] I will show you how you can participate in [your] sport and yet retain elasticity and suppleness of movement, coupled with tremendous energy and vitality," (Attila 1903, p. 15).

At about this same time, the phenomenally gifted strongman, Arthur Saxon, for years a center ring attraction with the Ringling Brothers Circus, published an excellent book, *Textbook of Weightlifting,* in which he wrote,

> It is and has been said that by developing one's strength to the degree of coping with weights of two or three hundred weight, a man will transform himself into a species of clumsy elephant, a kind of navy. . . . In short, totally incapable of anything resembling delicacy or skill.
>
> Very serious objections, these, and quite sufficient to put any man off weightlifting altogether—supposing them to contain even a tittle of truth. But do they?
>
> . . . while it quite possible to point to several weightlifters who are slow in movement, conception and execution compared with such a man as [boxing champion] Tommy Bums, for instance, it will invariably be found that these men are naturally and constitutionally slow and cumbrous, and that, if their whole record is examined, they have become far *quicker* men since they took up weightlifting than ever they were before, (Saxon, pp. 12-13).

As to why so many coaches and physical educators of the day came to reject such staunch and honest support of weight training, several explanations offer possibilities. For one thing, people in the U.S. during the early part of this century were familiar with horses and horsepower in ways almost unimaginable in today's auto-

In March of 1981, Terry presented an earlier version of this research at an NSCA regional conference held at The University of Virginia. His talk was called "The Myth of Musclebinding," and it was, as far as I can tell, the first time he addressed this topic at an academic meeting.

erotic world. They knew how a saddle horse looked and how a draft horse looked and how both horses moved. They knew that the smaller, lighter horses were faster and more nimble and they knew the relatively ponderous draft, or workhorses—who pulled heavy loads—were far stronger, but also far slower. They also knew that most of the top circus strongmen of the day, compared to an average athlete, looked quite "drafty" and massive. Was it then not reasonable for the general public to conclude that the thick-bodied lifters with their rolling gaits were the result, not of heredity and overindulgence at mealtime, but rather of the very lifting for which they were famous?

Another, and related, piece in the puzzle has to do with the effect over time of a very influential book, published in 1879, by William Blaikie—*How to Get Strong and How To Stay So* (2). It must be remembered that in the late 1800s and early 1900s, local book and magazine stores—assuming there were such things in any given locale—did not bulge with row after row of books and magazines on various aspects of fitness. This being the case back then, the few books that were written had a considerable impact, especially if they contained a broadside—as Blaikie's did—leveled at another form of exercise: in this case, Dr. Windship's Health Lift. Blaikie wrote, "Again, in the city, there are establishments where the chief and almost sole exercise is with the lifting machine. . . . The writer, when a lad of seventeen, worked a few minutes every day for six months on a machine of this kind; and while it seemed a fine thing to lift six hundred pounds at first, and over a thousand toward the end, there came an unquestioned stiffening of the back. . . . There came also a very noticeable and abnormal development of three sets of muscles: those of the inner side of the forearm, the lower and inner end of the front thigh just above the knee, and those highest up on the back, branching outward from the base of the neck . . . out of all proportion compared with that resulting from the other work. . . . We have seen it make one very stiff and ungainly in his movements, and it is natural that it should; for he who does work of the grade suited to a truck-horse is far more likely to acquire the heavy and ponderous ways of that worthy animal, (Blaikie 1879, p. 99).

Blaikie's no doubt well-intended criticism of Windship favorite form of progressive resistance was based in large part on his support for a type of lighter, calisthenic-like exercise just being popularized by a young instructor at Bowdoin and Yale who was to go on to become one of the giants in the field of physical education—Dr. Dudley A. Sargent. As is made clear in several of his books, Dr. Sargent, who was to serve for years as the director of Harvard's renowned Hemenway Gymnasium, recommended decidedly sub-maximal resistance using either small dumbbells or, more often, wall pulleys (23,24). That this "keep it light" approach had a sustained impact can be seen from the fact that, as late as 1960 the U.S. Naval Academy published a book on conditioning and exercise which recommended a few wall pulley movements but no free weight work at all (20). As late as 1963, the trainer at the University of Texas, Frank Medina, believed that no one needed more than 50 pounds in any exercise, no matter how big they were (20, 31).

In any case, Blaikie's and Sargent's positions gave way to a growing body of criticism of a much more

venal and shameful sort as various entrepreneurs sniffed around the spreading edges of the physical culture boom looking for ways to make an easy dollar. And though it is sad and ironic, it seems to be true that the single most powerful reason for the myth of the muscle-bound lifter came from the unconscionable advertising campaigns of rival "experts" in the early 1900s. These experts realized that, because weights were so expensive to mail, the margin of profit to be made from the manufacture and mail order sale of iron dumbbells and barbells was a small one. And so they began to search for alternative systems of exercise, even though they, themselves, were outstanding lifters.

What happened was that, in their pursuit of a hypertrophied profit-loss statement, these men all "discovered" a personal course of instruction which offered either very light equipment—read "cheap to mail"—or, in a brilliant, though dishonest, insight, no equipment at all. Thomas Inch, for instance, a record-holding English lifter who sold stretchable chest expanders, argued that,

> Taking it all around, I have decided that a chest expander is the most suitable instrument with which to train for any sport. It strengthens the boxer and does not reduce his speed, (Inch, no date. p. 1-2).

And "Professor" H. W. Titus, a lifter who sold another device in which resistance was provided by the stretching of elastic cables, had this to say about lifting and lifting machines, neither of which he sold.

> Weightlifting machines and lifting are to be avoided as one would the plague for they stiffen one and bring about a muscle-bound condition in a short time that may never be overcome. One young man came to me recently who had used such a machine for two months. He was so badly muscle-bound that a boy could excell (sic) him in any exercise requiring agility, (Titus, p. 6).

But it was Max Sick, or, as he was professionally known, Maxick—a 5' 2" German who was perhaps the greatest pound-for-pound lifter of the first third of this century—who showed Angelo Siciliano (a.k.a. Charles Atlas) that big bucks could be made selling a course of instruction that recommended no apparatus whatsoever. Maxick's particular gimmick was "Muscle Control," which involves flexing and tensing the various muscle groups of the body, and although he built his futuristic muscles and majestic power with weights, he nevertheless maintained in his 1911 book that:

> If your sport requires speed, avoid weightlifting as you would the devil; because if you indulge in it to the extent of using barbells heavy enough to admit of the name weightlifting being applied to it, you will surely become slow, (Maxick 1911, p. 21).

One of the results of the claims and scare tactics of these mudslinging charlatans was that many people began to distrust anything positive any lifter said, especially any claims that lifting could improve athletic skill. And this skepticism was reflected in turn during the early part of this century in the work of influential writers such as Jack London. In *The Abysmal Brute*, for instance, the hero of the story is described thusly: "'Tis the true stuff. Look at the slope of the shoulders. . . . Clean, all clean. . . . Not a muscle of him bound. No weightlifter or . . . exercise artist there."

So, with fifth columnists such as Maxick and Inch publishing self-serving attacks on the very system through which they obtained both their own physical strength and first fame, the U.S. coaching and physical education fraternity—not to mention the literary fraternity—can be at least partially excused for taking so long to disenthrall itself from the notion that weightlifting would cost an athlete more in terms of finesse, suppleness and speed than it would gain him in strength. And in all fairness it must also be admitted that at least part of the blame should fall on the broadening shoulders of those thousands of young men who, through the years, have fallen so in love with the burgeoning muscles lifting produced on their bodies that they seem almost constitutionally unable to walk down the street in public without spreading their backs and expanding their chests to such an extreme degree that anyone who sees them move is put in mind, not of a lithe jungle cat, but of an almost terminally constipated crab.

Narcissism, after all, was in principle and practice far less acceptable in those naturalistic days than it is

Table One: Mainstream Sports and Training Books Denigrating Weightlifting: 1900-1960

1. Allen, Edian. 1956. *Winning Baseball*. New York: The Ronald Press Company.
2. Allen, George H. 1954. *Encyclopedia of Football Drills*. New York: Prentice Hall, Inc.
3. Antonacci, Robert J. and Barr, Jene. 1956. *Baseball for Young Champions*. New York: McGraw Hill Book Company.
4. Budge, Lloyd. 1946. *Tennis Made Easy*. New York: The Ronald Press Company.
5. Canham, Don. 1952. *Field Techniques Illustrated*. New York: The Ronald Press Company.
6. Connolly, Maureen. 1954. *Power-Tennis*. New York: A. S. Barnes and Co.
7. Dodd, Bobbie. 1954. *Bobbie Dodd on Football*. Englewood Cliffs, N.J.: Prentice-Hall, Inc.
8. Gonzales, Pancho. 1961. *Tennis*. New York: Fleet Press Corporation.
9. Hamilton, Thomas J. 1943. *Track and Field*. Annapolis: The U.S. Naval Institute
10. Lai, William T. "Buck." 1954. *Championship Baseball from Little League to Big League*. Englewood Cliffs, N.J.: Prentice Hall, Inc.
11. Langmack, Holger Christian. 1926. *Football Conditioning*. New York: A. S. Barnes and Co.
12. Leahy, Frank. 1949. *Notre Dame Football*. New York: Prentice-Hall, Inc.
13. Mack, Connie. 1950. *Connie Mack's Baseball Book*. New York: Alfred A Knopf.
14. Royal, Darrell. 1963. *Darrell Royal Talks Football*. Englewood Cliffs, N.J.: PrenticeHall, Inc.
15. Tilden, William T. 1921. *The Art of Lawn Tennis*. Garden City, N.Y.: Garden City Publishing.
16. Tilden, William T. 1969. *Match Play and the Spin of the Ball.* Second ed. Port Washington, N.Y.: Kennitat Press.
17. Wilkinson, Charles (Bud). 1952. *Oklahoma Split T Football*. Englewood Cliffs, N.J.: Prentice-Hall, Inc.
18. Wills, Helen. 1929. *Tennis*. New York: Charles Scribner's Sons.

now. In football, for instance, it was thought almost unmanly to do too much preparation for fall practice. "Hell, fall practice was preparation," was the way Bully Gilstrap, a former college player and coach, put it in an interview. "It was all we got and more than we wanted. What we wanted was to play," (Gilstrap 1983).

Gilstrap is 83 now and comfortably retired, but he's been a football man nearly all of his life. He came to the University of Texas as a freshman in 1920 and he was an outstanding athlete during his college career, lettering several times in basketball and track, as well as in football. He returned to the University of Texas to coach in 1937 and remained on the staff for 20 years.

> "All we did to warm up and all was a few jumping jacks. Then we'd run plays or scrimmage. It was pretty much the same in basketball and track, too. The boys scrimmaged in basketball and they practiced their events in track. That was it. I don't know what they done in baseball," (Gilstrap 1983).

As far as baseball is concerned, the words of Bibb Falk, now in his 86th vigorous year, are instructive. Falk played at Texas for three years, beginning in 1917, then went straight to the big leagues where he played for 12 seasons. He returned to Austin in 1932, served as assistant coach until 1940, then coached the Texas team until 1968.

> We did a little of what we called P.T. in the early days, but only when it rained. Other than that the boys ran and threw and played. We wanted long, loose muscles and the word back then was that lifting would tie you up. To be honest I never even heard of a ballplayer using weights. Not in college and not in the bigs. Now Hack Wilson and Babe and some of the others did a lot of lifting, all

> right, but it was done a glass of beer at a time. The key to baseball is power and power comes from speed and we were leery of anything that might slow us up. When I played and for most of my coaching career we always believed that if a man ran enough and threw enough he'd be strong enough, (Falk 1984).

That this attitude prevailed in other sports as well, and at other schools than Texas, is made clear by a survey of mainstream sports and training books published during the first 60 years of this century, almost every one of which either denigrated weight training or ignored it altogether. Hundreds of such books were examined but the list appearing in Table 1 should suffice to make the point.

All too often, even well into this half of the century, the attitude in such books concerning conditioning in sports such as football was summed up by a line from a book published in 1958 by the freshman coach of the Yale squad, "The pros say that conditioning is just running, running, running," (Holgate 1958, p. 13).

But these attitudes among the leading coaches and athletes and physical educators were simply handed down as "received wisdom" from earlier authorities and treated as gospel. Early books by such important figures as Dr. R. Tait McKenzie fell like hammer blows against the claims of lifters. In 1907, for example, McKenzie first published a book that included the photograph of a man who, for those days, was heavily muscled (though he was, of course, less heavily muscled than an average varsity level running back today). The photograph was accompanied by this caption. "Extreme muscular development without a corresponding increase in heart and lung power. This man could not float in sea water and died prematurely," (McKenzie 1924, p. 22). This caption bears close examination, as the two statements, "This man could not float in sea water" and "(this man) died prematurely" seem to imply a causal relationship, though one may not exist. Neither, for that matter, is the cause of death given, so it could have been the case, for instance, that the man was run over by a milk wagon driven by Dr. McKenzie.

Even Bernarr Macfadden was held in the sway of the myth of muscle-binding, as evidenced by his 1912 statement,

> In taking up weight lifting, it would always be well to take some exercise for speed and flexibility to counteract the tendency to become slow. Weightlifting alone has a tendency to make the muscles slow, (Macfadden 1912, p. 847).

Naturally, such early sentiments found their way into the belief system of well respected college coaches—such as Dean Cromwell, UCLA track coach—and the myth continued to flourish.

> The athlete . . . should not be a glutton for muscular development . . . If one goes too far . . . he can defeat his purpose by becoming muscle-bound and consequently a tense, tied-up athlete in competition, (Cromwell 1941, p. 236).

And again, later in the same book and speaking of shot putters, the UCLA coach said, "Weightlifting is not advisable. Although it develops sinew, it tends to destroy muscle elasticity," (Cromwell 1941, p. 260).

Even the great Rockne was not immune. Referring to exercise apparatus for football, he wrote, "nor do I believe in any other artificial apparatus," (Rockne 1931, pp. 10-11). It seems that all coaches feared the dreaded condition they referred to by the term "muscle-bound." But what exactly is it, this state of being muscle-bound?

That was the question John Capretta, a young physical education student at Ohio State, attempted to answer over 50 years ago when he mailed a questionnaire to 45 leading physiologists, all of whom were asked to define the term, muscle-bound (3). Capretta justified the question by pointing out that,

> Physical educators today [1932] agree that we have very little, if any, scientific information upon the condition called muscle-bound. Authors of our text-books of physiology seem to have avoided the issue and have left the subject without discussion, (Capretta 1932, p. 43).

Of the 45 questionnaires, 22 were returned, but only seven ventured a definition and even these seven were in considerable disagreement, coming together as a majority only through the rather obvious observation that,

"The condition of muscle-bound is associated with hypertrophy," (3). But just because the leading physiologists of the day were at loggerheads over the definition of the term did not mean that they questioned either the reality or the harmfulness of the condition or their belief that being muscle-bound was primarily a product of resistance exercise, especially standard weight training. The author of the questionnaire, in fact, reports no challenge to his premise, only a general puzzlement. Nor did the next 20 years provide much in the way of clarification·

As Edward Chui wrote in 1950, "Very frequently, in the classroom, on the gymnasium floor, and on the athletic field, the term 'weight training' is associated with 'muscle boundness,' a condition supposedly resulting in a general slowing down of the contraction speed of the muscular system. No scientific evidence, however, has been advanced to support these beliefs," (Chui, p. 188).

But soon, as a direct result of men like Chui, scientific evidence would begin to mount which, in time, would be added to the empirical observations of the growing number of weight trainers to give the final quietus to the myth of the muscle-bound lifter.

Notes:

l. Attila, A. 1903. *The Art of Weightlifting and Muscular Development*. London: Health Culture Publishing Co.

2. Blaikie. William. 1879. *How to Get Strong and How to Stay So.* New York: Harper and Brothers.

3. Capretta, John. 1932. "The Condition Called Muscle-Bound." T*he Journal of Health and Physical Education* 3(2):43, 54, February.

4. Chui, Edward. 1950. "The Effect of Systematic Weight Training on Athletic Power." *The Research Quarterly* 21(3):188, October.

5. Cromwell, Dean B. 1941. *Championship Technique in Track and Field*. New York: McGraw-Hill Book Co.

6. Elyot, Sir Thomas. 1962. *The Boke Named the Governor,* ed. S. E. Lemberg. London: J.M. Dent and Sons.

7. Falk, Bibb. 1984. Personal interview, August.

8. Friedlander, Ludwig. *Roman Life and Manners under the Early Empire*, volume II. New York: E. P. Dutton Co.

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11. Gilstrap, H. E. "Bully." 1983. Personal interview, August.

12. Holgate, James "Gib." 1958. *Fundamental Football.* New York: The Ronald Press Co.

13. Inch, Thomas. *Training for Sport.* London: By the author.

14. Leonard, Fred Eugene. 1923. *A Guide to the History of Physical Education*. Philadelphia: Lea and Febiger.

15. Macfadden, Bernarr. 1912. *Macfadden's Encyclopedia of Physical Culture*. New York: Physical Culture Publishing.

16. Maxick [Max Sick]. 1911. *How to Become a Great Athlete*. London: Maxick and Saldo.

17. McKenzie, R. Tait. 1909, revised 1924. *Exercise in Education and Medicine*. Philadelphia: W. B. Saunders Co.

18. Medina, Frank. 1983. Personal interview, August.

19. Mendel, Alfred 0., ed. 1939. *The Living Thoughts of Montaigne,* pres. Andre Gide and trans. John Florio. New York: Green and Co.

20. Oerman, Karl C. H., et al. Revised 1960. *Conditioning Exercises, Games, Tests. Annapolis*: U.S. Naval Inst.

21. Robinson, Rachel Sargent. 1955. *Sources for the History of Greek Athletics*. Cincinnati: By the author.

22. Rockne, Knute. 1931. *Coaching*. The Devin-Adair Co.

23. Sargent, D. A. 1897. *Handbook of Developing Exercise*. Cambridge: Published by the author.

24. Sargent, D. A., et al. 1897. *Athletic Sports*. New York: Charles Scribner's Sons.

25. Saxon, Arthur. *Textbook of Weightlifting*. London: Health and Strength, Ltd.

26. Smyth, Albert Henry. 1907. *The Writings of Benjamin Franklin*, volume 5. New York.

27. Spaulding's *Official Athletic Almanac*.1923 issue. New York: Spaulding Athletic Library.

28. Titus, H. W. T*he Whys of Exercise.* New York: Published by the author.

29. Van Doren, Carl. 1938. *Benjamin Franklin*. New York: The Viking Press.

30. Webster, David. 1976. *The Iron Game*. Scotland: John Geddes, Printer.

31. Willoughby, David P. 1970. *The Super Athletes*. New York: A. S. Barnes and Co.

32. Windship, George Barker. 1860. "Physical Culture." *The Massachusetts Teacher* 13:128, April.

33. Young, David C. 1984. *The Olympic Myth of Greek Amateur Athletics*. Chicago: Aires Publishing.