Perspectives on Athletic Strength Training

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The strength training community can be basically divided into two factions; and, no, I'm not alluding to the "controlled vs. ballistic movement" controversy. The split I'm referring to involves those who have all of the answers (or at least claim they do) and those who still have numerous questions and are searching for the answers. The latter aggregation, at worst, is trying to go about this adventure with a semblance of common sense.

An appropriate lead-in to this article must include the statement that I am not an expert, in strength training or any other aspect of life. At the very best, I am a coach who wants to provide the athletes under my watch with the safest, most effective training methods currently available. The purpose of this piece is to offer perspectives, a dash of science, and, hopefully, a heapin' helpin' of sensible instruction.

Coaches who are looking to implement a system of strength training for their athletes often become disconcerted when searching through the plethora of currently available literature. This is especially true of coaches who have little experience in the area and are seeking practical, productive, reliable, and safe information.

Having previously coached at the high school level for ten years and currently in my fifteenth year at the collegiate level, I have been exposed to numerous training methodologies and philosophies. On a personal level, my experiences as a youngster/teenager were more geared to the powerlifting aspects of the strength game. Other than the squat, deadlift, bench press, and occasional power clean, the standing military press, and a lat pull of some sort provided the brunt of a workout. Experience, education, and thankfully meeting and befriending many of the "right" people, have led me to the approach I currently employ. Again -- and may I state this emphatically -- by no means whatsoever do we claim to have even half of the answers, much less all of them. Having said this, what follows is nothing more than thought provoking commentary.

Over the years, we have defined several elements that we feel are germane to program organization. Following is a compilation of considerations that will aid you in structuring a strength-training program. These tips on quality control have both a successful track record in terms of the results yielded with athletes as well as with gaining acceptance and support from parents, administrators, and other coaches.

SAFETY

You owe it to the young people entrusted to your care and guidance to offer the safest training methods available. While every phase of athletics involves a certain amount of risk, we are all obligated to search for and eliminate any needless, inherently dangerous training methods. This requires a little homework on your part, but it is time well spent.

If your intent is to implement a ballistic lifting program (i.e., Olympic lifts and their analogues), then by all means study it well, visit those who have been doing it for quite some time, and learn all of the intricacies from the inside out. Then, as with any type of strength program, teach it well. My personal opinion on this training methodology, however, is that it is unnecessary and carries a significant injury risk. Additionally, I have yet to see any definitive scientific literature intimating this training vogue as being superior in morphological, histological, or neurological augmentation than the high-tension protocol that we espouse.

And if you decide to implement a ballistic oriented strength program, be sure to keep an account of your athletes' complaints of low back, shoulder, wrist, and elbow pains. Experience tells me that you will have myriad injury issues, be they musculotendinous, musculoskeletal, neuropathies, or any other of a host of anomalies. These chronic complaints should send you a message that maybe this type of activity is unwarranted and that alternatives should be sought.

Weight room injuries are possible under any circumstances and without regard to training protocol. However, most practitioners would agree that certain movements carry inherent risks due to their execution requirements. These perils are present with or without "proper technique." The prudent coach examines these risks and makes decisions on implementation accordingly.

PARTICIPATION

Strength training is important for all team members, not merely for a chosen few or those who happen to enjoy it. If for no other reason, the fact that increased strength can be a deterrent to injury should make it the rule rather than an exception. When people ask me to name the most critical factor to the success of a program, I answer with one word -- "compliance."

COACHING AND SUPERVISION

Your entire coaching staff should be well versed on the practical application of your program. They should also be capable of providing hands-on assistance during the training sessions.

To accomplish this, you will need to meet with them and discuss the "X's and O's" of the program. Make sure that you troubleshoot any potential problems or disagreements as a staff before you present the program to the players. You will achieve better results and garner more enthusiasm for your program if you approach it with the same organization and effort as you would a practice situation.

Remember -- never leave your athletes unattended in the weight room. A qualified individual (preferably a full-time coach) should be present on the floor at all times.

COMMUNICATION WITH ADMINISTRATION, STAFF, AND PARENTS

During my years as a high school coach, I felt that it was vital to sell the importance of the program to our administration, staff, and parents as well as to keep them abreast of our progress. When these individuals have a better understanding of what you are trying to accomplish, you will win their enthusiasm and much needed support for your efforts.

This can be accomplished with something as simple as a monthly, one page newsletter which provides information on the improvements the athletes have made, descriptions of the "how's and why's" of your program, little blurbs of research you've come across regarding the benefits of proper training (especially regarding strength training's role in injury prevention), tips on proper nutrition (believe me, the moms love that one) etc. Before too long, you will have many of these people asking you what they can do to help your program.

Since your players are the ones being discussed and praised in this newsletter, it also provides another means of motivation for them, as well. Recognizing these young people for their efforts heightens their self-esteem and breeds pride within the team and the program.

Administrators and coaches of the other sports in your school will also appreciate the information and you may, in fact, convince those who have been unsure about the importance of such training to implement the program for their athletes. Since many athletes at the high school level participate in more than one sport, everyone benefits from the fact that these athletes are now afforded the opportunity to work on their strength on a year-round basis.

VARIETY

We suggest the incorporation of as much variety in the training sessions as time, space, equipment, and imagination will allow. Whether you change the exercises, tools, or order of the exercises from workout to workout, try to keep things fresh and challenging. Strength training is hard work -- but it shouldn't be boring.

FREQUENCY AND DURATION OF THE WORKOUTS

Research and practical application indicate that two to three non-consecutive lifting days per week during off-season periods will achieve excellent results. During in-season periods, one to two workouts per week will suffice. We suggest total body workouts on these days, utilizing a variety of exercises which stimulate the major muscle groups through the fullest range of motion safely possible.

Your workouts should be designed so that they can be completed in an hour or less. If your athletes are truly working with purpose and intensity, they should have no problem achieving this. This hour includes not only the actual work being performed, but also the recovery intervals, weight adjustments, and other incidentals that accompany a workout session.

Our workouts entail anywhere between twelve and twenty total sets per workout; this variable being dependent on the time of year (i.e., in-season/off-season), time restraints, and an evaluation of the other physical stresses placed on our athletes.

When heavy running workouts begin, you may want to consider eliminating lower body work on the middle training day at times. This is a judgement call on your part -- based on how you feel the players are performing -- and it can also help prevent overtraining, especially when heavy sprint workouts begin.

COMPREHENSIVE STRENGTH TRAINING

Some strength training programs revolve around three to five "core" lifts and what are sometimes termed "auxiliary" exercises. This terminology sends a message to the participants that the core exercises are important and the auxiliary exercises are "not so important."

This fallacious thinking stems from the twisted notion that certain lifting movements are "athletic lifts" (you name the sport) and are mysteriously commensurate with successful skill acquisition. The motor learning scientific literature fails to support these fairy tale delusions on the specificity issue, and I refer you to the last section, No Transfer of Basic Abilities, by Dr. Richard Schmidt for some illuminating commentary on the skill transfer denouement.

We do not believe that there is any "Big 3" or "Big 5" workout that, in itself, can adequately prepare an athlete for the rigors of competition. While this approach may be fine for an individual who competes solely in weight lifting events, the athlete of other sports needs much more balanced development in all of the agonist and antagonistic structures in the muscular system. A severe imbalance, or "weak link", can predispose the athlete to muscle or connective tissue injury.

Much of this erroneous "mainstream" mentality eventuates from the influence of competitive weightlifting on the strength training community. When we confront these individuals and organizations to substantiate many of these proposed axioms with sound science rather than buzzwords and nebulous neologisms, we receive more buzzwords and nebulous neologisms.

As a general rule, a workout should account for the following muscle complexes on just about every workout, or at least twice by the end of the training week: Neck, Quadriceps, Hamstrings, Gluteals, Lower Back, Calves, Chest, Shoulders, Upper Back, Biceps, Triceps, Forearms, and Abdominals. There are numerous ways to get this done as far as equipment is concerned. Don't be misled into thinking that only one or two types or modes of equipment can accrue the sought after results. Those who propagate the "free weights only" approach --or any other narrow-minded, confining approach -- usually have a financial, self-serving, or otherwise insidious agenda.

This type of comprehensive approach will assure balanced development and better prepare the athletes for the physical stresses of competition.

No Transfer of Basic Abilities

A common misconception is that fundamental abilities can be trained through various drills or other activities. The thinking is that, with some stronger ability, the athlete will see gains in performance for tasks with this underlying ability. For example, athletes are often given various "quickening" exercises, with the hope that these exercises would train some fundamental ability to be quick, allowing quicker responses in their particular sports. Coaches often use various balancing drills to increase general balancing ability, eye movement exercises to improve vision, and many others. Such attempts to train fundamental abilities may sound fine, but usually they simple do not work. Time, and often money, would be better spent practising the eventual goal skills.

There are two correct ways to think of these principles. First, there is no general ability to be quick, to balance, or to use vision. Rather, quickness, balance, and vision are each based on many diverse abilities, so there is no single quickness ability, for example, that can be trained. Second, even if there were such general abilities, these are, by definition, genetic and not subject to modification through practice. Therefore, attempts to modify an ability with a nonspecific drill are ineffective. A learner may acquire additional skill at the drill (which is, after all, a skill itself), but this learning does not transfer to the main skill of interest.

Schmidt, Richard A. (1991), Motor Learning and Performance: From Principles to Practice, pg. 222, Human Kinetics.

PROGRESSIVE OVERLOAD

Effective strength training requires progression and indications of this must be recorded. There are numerous overload systems to choose from and most of them work very well.

Our primary overload plan is known as "double progression." It is simple in concept, yet extremely productive in results. We set a rep range for all of our exercises (lower body ranges are usually 8-10 or 10-15 and upper body ranges are usually 6-10). An athlete will initially find a weight that allows him to work in the lower end of the range and gradually progress to attain the high end of the range. Once the high end of the range is accomplished, the weight for that particular exercise will be increased. This increment can be as low as 2.5 lbs. and as high as 10 LBS., depending on the exercise and the muscle groups being worked. Basically, our upper body increments are between 2.5 and 5 lbs., and our lower body increments are between 5 and 10 lbs.

This system allows each athlete to progress at his own rate while at the same time challenging him to make steady improvements.

SETS

How many sets should I do? Probably no question is asked more often in the weight room. The answer usually ranges between one and five, depending on whom you ask. We can only offer our suggestions based on our research and practical experience:

1. Sets should be limited -- one to three sets of any exercise performed with the appropriate intensity is enough to stimulate gains in size and strength. For the most part, we would rather use two or three different exercises for a particular muscle group than to perform two or three sets of the same exercise. If your choice is to perform more sets of a particular exercise for whatever reason(s), you probably will need to reduce the total number of exercises within the workout.

2. Rather than perform more sets, our emphasis is on performing more work within the set. On the majority of our exercises, the players use the heaviest weight possible for each set and perform the maximum number of reps with proper form.

CONCLUSION

The above guidelines for program organization merely represent a general overview of considerations for the coach who is planning the off-season strength program. The list is by no means all-inclusive, as each coach has his own personality and philosophy. Our hope is that we've given you some helpful information to initiate a successful program.

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