Winter 1992
Volume 1, Number 1

ATHLETIC CONDITIONING QUARTERLY

A Publication of Elite Fitness International

Strength Training for Wrestling . . . Princeton Style!

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The importance of strength, power, conditioning, flexibility, agility and coordination is quite evident in the sport of wrestling. Preparation for competition, therefore, should include strength training exercises, conditioning activities, stretching movements and the practicing of proper task-specific repetitions.

Remember that your athletes are wrestlers - not competitive weightlifters or bodybuilders. There's nothing wrong with wanting to look better but don't forget that your wrestlers could look like Tarzan and still wrestle like Jane! Also keep in mind that attempting to see how much weight a person can lift for one repetition is potentially dangerous and really doesn't prove anything anyway. In addition, multiple sets are extremely inefficient in terms of time and will significantly increase the risk of incurring an overuse injury due to repetitive muscular trauma.

This article will present ten basic strength training principles that can be used to design a safe, practical, productive and efficient program for wrestlers. Regardless of sport, the two main purposes of any strength training program should be to **decrease injury potential and to increase performance potential**. Increasing the strength of the muscles, bones and connective tissue will reduce the likelihood of incurring an injury while wrestling. And, an athlete who increases his functional strength will be taking an important step toward realizing his potential as a wrestler.

Strength Training Principles

A very productive and physically demanding strength workout that is quite time-efficient can be performed by using the following guidelines:

1. Training with a high level of intensity. Research suggests that an individuals's level of intensity (or effort) will largely determine one's results from a strength program. In other words, the **harder** a person trains, the **better** the response. At Princeton University, we encourage our wrestlers to train with a very high level of effort and intensity. Each exercise is performed to the point of **concentric** muscular failure. In simple terms, concentric muscular failure means that you've exhausted your muscles to the extent that you literally cannot raise the weight for any more repetitions. That's a really high level of effort! After reaching concentric muscular failure, we increase the intensity even further by performing 3 to 4 additional post-fatigue repetitions. These post-fatigue reps may be either **negatives or breakdowns.**

Negatives (also called forced reps) are accomplished by having a training partner raise the weight while the lifter resists the movement during the lowering (or "eccentric") phase. For example, suppose that you reached concentric muscular failure on a barbell bench press. Your partner would help you raise the weight off your chest until your arms are extended. Then, you lower the weight under control back to your chest. Your partner can even add a little extra resistance by pushing down on the bar as you lower it. In effect, these post-fatigue reps are **positive-assisted** and **negative-assisted**. (Raising the weight is typically referred to as the **positive or concentric** part of the movement; lowering the weight is usually referred to as the **negative or eccentric** part of the movement.) Performing a few negative repetitions at the end of an exercise will allow you to reach eccentric muscular failure - when your muscles have fatigued to the point that you can't even lower the weight! And that's why a set-to-failure followed immediately by several negatives is so brutally effective: you've managed to exhaust the muscle completely - both concentrically and eccentrically.

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Breakdowns (also called regressions) are another way of achieving a greater level of intensity and concomitant muscular overload. When performing breakdowns, you (or your training partner) quickly reduce the starting weight by about 25 to 30 percent and the lifter does 3 to 4 post-fatigue reps with the lighter resistance. Let's say that you did 14 reps with 100 pounds on the leg extension before reaching concentric muscular failure. You (or your partner) would immediately reduce the weight to about 70 to 75 pounds and would then attempt to perform 3 to 4 reps with the lighter weight.

In a certain sense these post-fatigue reps (either negatives or breakdowns) are a second set ... but they've come immediately after reaching muscular failure. Since there is little or no recovery time between these "sets", the additional post-fatigue reps are simply an extension of the first set.

If you've ever performed an exercise to the point of muscular failure and followed it by a few negative or breakdown repetitions, you'd quickly realize why it's called "high intensity"! Don't be misled by the program's brevity or simplicity. When performed correctly, a high intensity program can be just as productive as a traditional multiple set program - provided, of course, that each set is performed to the point of muscular failure. Remember, a submaximal effort will yield submaximal results.

2. Attempt to increase the weight used or the repetitions performed every workout. For your muscles to get stronger, you must do progressively harder work. A muscle must be stimulated (or "overloaded") with a workload that is increased throughout the course of a program.

Therefore, every time your athletes work out encourage them to increase the weight used or the repetitions performed. This can be viewed as a "double progressive" technique (resistance and repetitions). Challenging the muscles in this manner will force them to adapt to the imposed demands (or stress); the muscles adapt to such stress by increasing in size and strength. The extent to which this occurs then becomes a function of an individual's genetics.

Each time the maximum number of repetitions are attained, the resistance should be increased for the next workout. The progressions need not be in Herculean leaps and bounds ... but it must always be challenging. The load should be increased in an amount that an athlete is comfortable with. However, the muscles will respond better if the progressions in resistance are five percent or less. But again, the resistance must always be challenging.

As a strength coach, I am not really concerned with what one wrestler can lift relative to another wrestler. However, I am concerned with what a wrestler can lift relative to his previous performances. In other words, I don't compare one athlete's strength to another - I just want to make sure that each wrestler is as strong as he can be.

3. Perform one intense set of each exercise. An athlete need only perform one set of each exercise provided that it is done with an appropriate level of intensity. A multiple set program is productive due to the cumulative effect of each successive set while a single-set-to-failure program is productive due to the cumulative effect of each successive repetition. Indeed, one set done with a maximal level of effort is the metabolic equivalent of several sets done with a submaximal level of effort.

How does this happen in only one set? Well, suppose that you are to perform a set of leg extensions with 100 pounds. In order to overcome inertia and give movement to the 100 pounds of resistance, your quadriceps must exert slightly more than 100 pounds of force. The weight will not move if a force less than or equal to 100 pounds is applied. During the first repetition, only a small percentage of your available muscle fibers are being used - just enough to move the weight. As you perform each repetition, some muscle fibers will fatigue and will no longer be able to keep up with the increasing metabolic demands. Fresh fibers are simultaneously recruited to assist the fatigued fibers in generating ample force. This process continues until the last repetition when concentric muscular failure is finally reached. At this point, your remaining fibers cannot collectively produce enough force to raise the weight. During this final repetition, the cumulative effect of each preceding repetition has provided a sufficient (and inefficient) stimulus for muscular growth.

As stated earlier, multiple sets are relatively inefficient in terms of time and, therefore, are undesirable. Also keep in mind that performing too many sets or too many exercises can actually be counterproductive by creating a catabolic training effect that retards muscular growth.

Once again, when using a single set program each and every set must be done to the point of concentric muscular failure. Your wrestlers should be thoroughly exhausted at the end of each exercise.

4. Reach muscular failure within a prescribed number of repetitions. In general, your athletes should reach concentric muscular failure within 15-20 reps for exercises involving the hips, 10-15 reps for the legs and 6-9 reps for the upper torso. Once again, the resistance should be increased whenever the maximum number of repetitions are achieved.

5. Exercise throughout the greatest possible range of motion that safety allows. Another important consideration is how your wrestlers perform an exercise. Each repetition should be done throughout the greatest possible range of motion that safety allows. This will maintain (or possibly increase) their flexibility. Furthermore, it ensures that they are exercising their entire muscle ... not just a portion of it.

In order to prevent injury, the weight should be raised and lowered in a deliberate, controlled manner. It should take about 1 to 2 seconds to raise the weight and about 3 to 4 seconds to lower it. In effect, each repetition should be roughly 4 to 6 seconds in length.

6. Strength train for no more than one hour per workout. If your athletes are training with a high level of intensity - and they should - a workout need only take 30 to 45 minutes to complete. If your wrestlers are spending much more than an hour in the weight room, then they are probably not training with a desirable level of intensity.

7. Perform no more than 20 exercises each workout. A comprehensive strength training program for wrestling consists of 17-20 exercises each workout

Bodypart	Exercises	Reps
Hips	1-2	15-20
Hamstrings	1	10-15
Quadriceps	1	10-15
Calves/Dorsi Flexors	1	10-15
Chest	2	8-12
Back ("lats")	2	8-12
Shoulders	2	8-12
Biceps	1	8-12
Triceps	1	8-12
Forearms	1	8-12
Adominals	1	72 secs
Lower Back	1	10-15
Neck	2-4	8-12

As you can see, the focal point for most of these exercises is your major muscle groups. Your wrestlers should be able to select any exercises that they prefer for the bodyparts listed in the chart.

8. Whenever possible, work the muscle groups from largest to smallest. Exercise the hips first, then go to the legs (hamstrings, quadriceps and calves or dorsi flexors), upper torso (chest, back and shoulders), arms (biceps, triceps and forearms), abdominals and finally the lower back. The neck can be exercised at the beginning, in the middle (following the lower body movements) or at the end of the routine.

9. Strength train 2-3 times per week on nonconsecutive days. Care must be taken to ensure that an adequate amount of recovery occurs between strength workouts. Believe it or not, your muscles do not get stronger while you work out ... your muscles get stronger while you recover from your workout. When you lift weights, your muscle tissue is broken down. The recovery process allows the muscle tissue to rebuild. In fact, a period of 48-72 hours is necessary for a muscle to recover properly from a strength workout. Thus, it is suggested that your wrestlers lift three times per week on nonconsecutive days.

After about 96 hours without a resistance workout, the muscles begin to get progressively weaker. That's why it's important to continue to strength train while in season or when competing. However, you will need to reduce your athletes' workouts to twice a week due to the increased activity level of practices and meets. One of these two weekly sessions should be done as soon as possible following a meet and the second strength workout should come no later than 48 hours before the next meet. So, if your team wrestles on Saturdays, you should lift on Sundays (or Mondays) and Wednesdays (or Thursdays, providing it's not within 48 hours of a meet.)

10. Keep accurate records. Accurate record keeping is extremely important. This is a log of what your wrestlers have accomplished during each and every exercise of each and every strength session. In a sense, a workout card is a history of their activities in the weight room.

A workout card can be an extremely valuable tool to monitor progress. For this reason, each athlete should keep a record of his bodyweight, the date of each workout, the weight used for each exercise, the repetitions performed for each exercise and the order in which the exercises were performed.

Figure #1 represents a sample workout card. Due to space constraints, it's been limited to the lower body section (i.e. hips and legs). It's important to note several aspects of the workout card. Notice that the

bodyparts are listed along the lefthand side of the card accompanied by a recommended number of exercise selections (e.g. "LEGS (3)"). A few exercises are listed, but a blank space is provided in the event that one of your athletes opts for a movement that isn't shown. The suggested repetition ranges are also given for each exercise along with spaces to record seat adjustments.

(Matt Brzycki is the critically acclaimed author of the book "A Practical Approach To Strength Training". This book is available through the Coach's Bookshelf.)

DATE:
BODYWEIGHT:

	EXERCISE	REPS	SEAT					
HIPS (1-2)	Leg Press	15-20						
	Deadlift	15-20						
LEGS (3)	Leg Extension	10-15						
	Leg Curl	10-15						
	Calf Raise	10-15						

FIGURE #1: SAMPLE WORKOUT CARD

The area to the immediate right of this information is where the data is recorded from the strength sessions. Figure #2 details how to record the weight used, the repetitions performed and the order in which the exercises were completed.

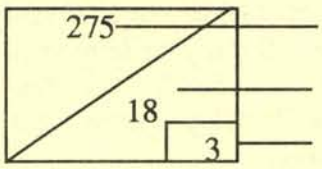

FIGURE #2: RECORDING WORKOUT DATA

Overtime

It would be in the best interest of your wrestlers to have them engage in a meaningful strength training program. Remember, the comprehensive program is one that is productive, efficient, practical and, most importantly, safe. Best wishes for strength and health in the seasons ahead.

What is Strength?

By
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Of all the components of physical-fitness, strength training is the least understood and the most controversial. The range of strength training protocols are as diverse as the individuals who design them. Ironically, despite the individual dis-similarities in protocol-design, the individual similarities in physiological-design creates a reference for common truths and principles. As a result, one would think that strength training would be more of a systematic science, rather than philosophical hearsay.

There are about as many different strength training programs as there are definitions of strength. Herein lies the problem. Our definitions of STRENGTH (or lack of definition), lays the foundation for how one will DEVELOP STRENGTH and how one will MEASURE STRENGTH. Afterall, for one to develop and/or measure strength; one must first have a fundamental understanding of "What is to be measured?" and "How is it to be developed?" Thus, for one to understand the means, one must first have a definable understanding of which is to be the end.