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CLINIC

Drop Technique

by

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We periodically employ a drop technique by our outside linebacker (Stud Safety) when he is aligned to the split end (X) side of a formation. The drop technique requires our Stud Safety (SS) to initiate or execute his responsibilities from a relative position at LBER depth. The basic alignment, stance, keys, and responsibilities of the Stud Safety's drop technique are as follows:

A. Alignment: Relative position/LBER depth

B. Stance: Basic 2-point/Feet, hips, and shoulders parallel to LOS

C. Keys: Mid-point between near back and football [near back, uncovered linemen, and ball (on or off LOS)].

D. Responsibilities:

1. You are responsible for D-gap control on run flow to your side of the formation. Your run responsibility is delayed because of your alignment depth (4 yards) but, you are a force-contain player on any run flow to your side.

2. When the football is snapped and ball flow action is initiated in your direction, you must immediately read and recognize:

(a) Ball OFF LOS = Wide running play

Pass action

(b) Ball ON LOS = Inside running play

Option

If the Quarterback and/or the football go into the offensive backfield and the near back sprints to attack your outside hip, the play is a hand-sweep, toss-sweep, or quick pitch. Challenge the LOS quickly and gain depth into the offensive backfield. Attack the lead blocker's outside shoulder and force the ball carrier to cut back to the inside. Do not leave your feet and do not let the lead

Training Q & A #'s 11 and 12

by
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As a coach, I'm concerned about the progress of my athletes in the weight room. What strength tests can you recommend?

Strength testing isn't really necessary to monitor your athletes' progress. If your athletes are recording their workout data -- and they should -- you can simply check their workout cards to evaluate their strength levels. This doesn't mean that strength testing cannot be done -- some coaches use it as a motivational tool. That's fine, as long as the strength test doesn't become a weightlifting meet.

The most popular -- and traditional -- way to assess muscular strength has been to determine how much weight an individual can lift for a one repetition maximum (1-RM). Unfortunately, attempting a 1-RM is potentially dangerous. So, how can muscular strength be measured in a safe and practical -- yet reasonably accurate -- manner without having someone max out? The answer lies in the relationship between strength and anaerobic endurance. There is a direct relationship between the percentage of maximal load (strength) and reps-to-fatigue (anaerobic endurance): As the percentage of maximal weight increases, the number of reps decreases in an almost linear fashion. Unless you have

an injury or other musculoskeletal disorder, this kinship between your muscular strength and your anaerobic endurance remains constant. Since there is a distinct relationship between these two variables, you can determine anaerobic endurance by measuring strength... and you can also determine your strength by measuring anaerobic endurance.

This relationship is not exactly linear but close enough to determine a reasonably accurate linear approximation for describing the relationship between the two variables. In fact, the following mathematical equation can be used to predict a 1-RM based upon reps-to-fatigue:

$$\text{PREDICTED 1-RM} = \frac{\text{Weight Lifted}}{1.0278 - .0278X}$$

Where X = the number of reps performed

Example: Suppose that a male athlete did 8 reps-to-fatigue with 150 pounds. First, multiplying .0278 by the number of reps [8] equals .2224. Subtracting .2224 from 1.0278 leaves .8054. Dividing .8054 by the weight lifted [150 pounds] yields a predicted 1-RM of about 186 pounds.

In other words, he can do 8 reps with about 80.54 percent (or .8054) of his predicted 1-RM. Regardless of whether his strength increases or decreases, he will always be able to perform exactly 8 reps with roughly 80.54 percent of his maximum. Therefore, if he increases his 8-RM (his anaerobic endurance) by 20 percent [from 150 to 180 pounds] then he'll also increase his 1-RM (his muscular strength) by 20 percent [from 186 to 223 pounds]. A study at Washburn University by LeSeur and McCormick (1993) found that this formula was especially accurate for predicting a 1-RM bench press ($r = .99$).

It appears as if the relationship is not quite as linear beyond about 10 reps. So, this formula is only valid for predicting a 1-RM when the number of reps-to-fatigue is less than 10. It should also be noted that if the reps exceed about 10, then the test becomes less accurate for evaluating anaerobic endurance as well as for estimating a 1-RM. At any rate, a test of anaerobic endurance -- though not a direct measure of pure maximal strength -- is much safer than a 1-RM lift because it involves sub-maximal loads.

One final note: The purpose of strength testing should not be to compare the strength of one person to

another. It's unfair to make strength comparisons between individuals because each person has a different genetic potential for achieving muscular strength. Strength testing is much more meaningful and fair when an individual's performance is compared to his or her last performance -- not the performance of others.

How important is the pre-game meal?

A pre-game meal should accomplish several things, such as removing your hunger pains, fueling your body for the upcoming game and settling you psychologically. No foods will lead directly to a great performance when consumed several hours before a game. However, certain foods should be avoided prior to competition or exercise. For example, fats and meats are digested slowly. This means that the traditional steak dinner might actually be the worst possible meal to eat before a game! Other foods to omit include those that are greasy, highly seasoned and flatulent (gas-forming), along with any specific foods that you may personally find distressful to your system.

If anything, your pre-game meal choices should be almost bland, yet appetizing enough so that you want to eat it.

The best foods to consume prior to a game or exercise are carbohydrates. Carbs are easily digested and help maintain your blood glucose levels. Water is perhaps the best liquid to drink before competing. The amount of fluid intake should guarantee optimal hydration during the game.

The timing of your pre-game meal is also crucial. To ensure that the digestive process doesn't impair your performance, your pre-game meal should be eaten three hours or more before game time. In short, your pre-game meal should include foods that are familiar

and well-tolerated -- preferably carbohydrates.

Aren't amino acids supplements necessary for obtaining maximal muscular size and strength?

Make no mistake about it: the supplement industry is a big business. It's estimated that 18 million Americans are "bilked" of at least 2 billion dollars each year by "nutritional" supplements, special foods, books and quack devices that are reputed to solve a wide spectrum of nutritional ills with almost supernatural powers.

Amino acids -- the so-called "building blocks" of protein -- have been promoted for years as an absolute requirement for obtaining maximal muscle size. This hype-inspired use of amino acids by large numbers of individuals has generated considerable concern for consumer safety. In 1992, the Federation of American Societies for Experimental Biology reviewed the scientific literature on the safety of amino acids and reported that there is insufficient scientific evidence to establish safe levels of intake of the amino acid supplements on the market. Additionally, the American Council of Science and Health recommends, "Unless you are participating in a scientific study conducted by reputable researchers, you should not take amino acid supplements since they have not been proven safe." The dangers of amino acid supplementation were tragically illustrated several years ago when the amino acid L-tryptophan was associated with at least 1500 cases of painful muscle disorder including at least 38 deaths.

In short, the effect on the body of the single amino acids contained in many nutritional supplements is still not fully understood and their use in special supplements should be avoided altogether.

Incidentally, several of the most widely-sold "muscle mags" are published by supplements manufacturers and exist mainly to promote their nutritional products. A sampling of recent issues of four popular bodybuilding magazines by the New York City Department of Consumer Affairs revealed that 56% of the full page ads were for "worthless and possibly even harmful nutritional supplements." For the most part, these publications are essentially nutritional supplement catalogs that are neatly packaged with some articles on training.

If you are consuming a variety of foods that provide adequate calories and nutrients, there's no need for supplements. Research has concluded that nutritional supplements have little or no positive influence on performance and may even be physiologically damaging. If you took the money used to purchase these expensive supplements and invested it in high-quality foods instead, you'd be much more successful in maximizing your potential in a far safer manner. Remember, there are no shortcuts to proper nutrition.

How many sets of each exercise should I be doing?

In terms of an appropriate number of sets, keep in mind that in order for a muscle to increase in size and strength it must be fatigued or overloaded. It's that simple. It really doesn't matter whether you fatigue your muscles in one set or several sets -- as long as your muscles experience a certain level of exhaustion. When performing multiple sets, the cumulative effect of *each successive set* makes deeper inroads into your muscle thereby creating muscular fatigue; when performing a single-set-to-failure, the cumulative effect of *each successive repetition* makes deeper inroads into your muscle thereby creating muscular fatigue. In fact, numerous

research studies have shown that there are no significant differences when performing either one, two or three sets of an exercise ... provided, of course, that one set is done with an appropriate level of intensity (i.e. to the point of concentric muscular failure). Following concentric muscular failure, you can further overload your muscles by incorporating a few post-fatigue reps -- either negatives or regressions.

Both a single-set-to-failure and multiple sets produce muscular fatigue. However, multiple sets do not necessarily guarantee that your muscles received a sufficient level of muscular fatigue. Indeed, a large amount of low-intensity exercise will do very little in the way of increasing strength. But, performing one set of an exercise to the point where you cannot do any more repetitions *always* achieves a desirable level of muscular exhaustion.

Everything you do in the weight room should have a purpose. That purpose is to reduce your risk of injury and to realize your potential as an athlete. You should emphasize the *quality* of work done in the weight room rather

than the *quantity* of work. Don't do meaningless sets in the weight room -- make every single exercise count. Remember, the most efficient program is one that produces the maximum possible results in the least amount of time. After all, why perform several sets when you can obtain similar results from two sets, or even one set in a fraction of the time?

Performing too many sets -- or too many exercises -- can also create a catabolic training effect that retards muscular growth. When this happens, your muscles are broken down in such an extreme manner that your body is unable to regenerate muscle tissue. This results in a *loss of size* and strength. Also keep in mind that performing too many sets increases your risk of an overuse injury.

Don't be misled by the brevity or simplicity of a program that calls for one set of each exercise done with a high level of intensity. An exercise performed with a high level of intensity can be very productive and effective. In fact, University of Toledo Strength Coach Ken Mannie has stated that high

intensity strength training is "the most productive, most efficient and without a doubt, the most demanding form of strength training known to man." Enough said!

About The Author

Matt Brzycki has been the Strength Coach and Health fitness Coordinator at Princeton University since August 1990. Coach Brzycki has authored more than 100 articles on strength and fitness and a book, A Practical Approach to Strength Training, which is in its second edition. He has also coauthored the book Conditioning for Basketball with Shaun Brown, Strength Coach for the University of Kentucky basketball team.

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