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NOVEMBER/DECEMBER 1992

VOL. 3, NO. 6

PROPER STANCE FOR THE SQUAT EXERCISE - PART II

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Knees Should be Proximal to Tips of Toes

During all phases of the squatting exercise, the kneecaps should not be too far forward. A plumb line attached at the center of the kneecap should touch on the top of the foot. (See Fig. 1) Correct knee position helps prevent



Fig. 1

excessive anterior strain to the patella tendon. If the plumb line falls past the tip of the toes this means that the knees are too far forward. (See Fig. 2) This improper knee position sets up for strain which may take weeks, months, or years to occur and may cause irreversible damage. To correct this the lifter should redirect the buttocks

more posteriorly as if sitting in an imaginary chair.

The Squat Should be Limited to 90 Degrees of Knee Flexion

Bending of the knees as the lifter is squatting downward should be limited to forming a right angle between the lower legs and the thigh. Squatting down to this position creates sufficient tension (work) to strengthen the anterior thigh musculature by making use of the principles of eccentric (lengthening) contraction. The posterior muscles are also contracted in order to maintain balance. However, with knee flexion greater



Fig. 2

than the right angle (90 degrees) only the medial condyle of the femur (thigh bone) articulates with the corresponding medial surface of the patella, and increases pressure on this area (see Fig. 3). This increased pressure to the medial surface may predispose the knee joint to wear and tear. With the knees bent less, the medial and lateral



Fig. 3

aspects of the knee joint bear the pressure and weight forces are more evenly distributed.

Correct the Arch of the Back and Bend at the Waist

The lifter should maintain a mild arch of the lower back. This helps to pro-

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Buy someone a subscription to **The Lifter's Press** - a fine accompaniment for those involved in a weight training program.

OVERCOMING THE STRENGTH PLATEAU - PART I

by Matt Brzycki, Strength Coach, Princeton University

Periodically, you'll reach a point in your training when your strength gains have leveled off or "plateaued." Quite often, this is a result of overtraining — you are performing entirely too much work, which causes your muscular system to be overstressed. In effect, the demands have exceeded your recovery ability. In this case, you simply need to reduce the volume of work you are doing in the weight room.

Sometimes, however, your strength will plateau as a result of performing the same routines over and over again each session for long periods of time. In these instances, the workout has become a form of unproductive manual labor that is monotonous, dull and unchallenging.

You can prevent this from happening by varying or changing your workouts. In some cases, only one or two aspects of your workout need to be modified in order to inject a little pizzazz back into your strength program. There are several ways that this may be accomplished.

Rearrange the Order

One of the easiest ways to modify your workout is to rearrange the order in which you perform exercises for a particular body part. Suppose, for example, your shoulder strength seems to have reached a plateau. If you've been doing an upright row followed by a shoulder press and then a lateral raise, you can switch these three movements, performing the shoulder press first, the lateral raise second and the upright row next.

Remember, you must adjust your weights whenever you vary the order of exercises. Using the previous example, let's say you normally use 90 pounds in the upright row followed quickly by a shoulder press with 100 pounds and lateral raises with 15 pound dumbbells. If the order of exercises is changed (i.e. the shoulder press is done first), your shoulder musculature will be relatively fresh for the shoulder press and, therefore, you would now be able to handle more resistance. However, you must

reduce your usual weight in the other movements, since your deltoids will be more fatigued than usual from performing the shoulder press beforehand.

An additional possibility is to exercise your muscle groups in a different sequence. Instead of going from chest to back to shoulders, you might start with your back exercises, then proceed to your shoulder movements and finish off with your chest area. So, an upper torso routine of bench press, bent arm fly, lat pulldown, pullover, shoulder press and lateral raise could be changed to pullover, lat pulldown, lateral raise, shoulder press, bent arm fly and bench press. In fact, these six exercises alone could be rearranged for 720 different routines! Once again, any time you rearrange your sequence of exercises, you'll need to adjust the levels of resistance.



Part II of this article will appear in our next issue (January/February 1993).

UNIVERSITY OF WISCONSIN STUDY SUGGESTS THAT FASTER MUSCLE GROWTH/QUICKER RECOVERY TIME BETWEEN WORKOUTS MAY BE POSSIBLE -- WITHOUT HARMFUL STEROIDS AND OTHER RISKY PERFORMANCE-ENHANCING PRODUCTS

The *Lifter's Press* is traditionally skeptical when it comes across unhealthy, unproven, expensive, and risky "quick-fix" advertising gimmicks promoting faster size and strength gains, accelerated recovery times, "build bigger muscles through this product," etc. — unless there is scientific basis and credible research supporting such claims.

Readers, therefore, may indeed want to try something, which may have some validity, based on university research -- particularly something which is free and seems safe (no dangerous side effects, no supplements, no anabolic drugs).

According to the editors of *Men's Health Magazine* (editors of *Men's Health Advisor* 1992, Rodale Press, Em-

maus, PA), University of Wisconsin researchers find you can make your body produce natural growth effects (without harmful steroids and other risky and/or unproven performance-enhancing products).

The researchers state that when athletes engage in anaerobic exercises (short, high-intensity bursts of activity), their bodies produce *twice as much human growth hormone* as when they cover the same distance at a slower pace.

The University of Wisconsin study shows that when *weightlifters end their sessions with a 1/4-mile, all-out wind sprint, they might experience faster muscle growth and more rapid recovery between workouts.*

How is this done? *The Men's Health Advisor* 1992 mentions furthermore that "human growth hormone, a powerful substance produced by the pituitary gland, is thought to help maintain muscle tone and burn fat."

(JC)

Source: *Men's Health Advisor* 1992, Rodale Press, Emmaus, PA, 1992, p. 232.

Editor's Note:

It is important to gradually cool down after vigorous exercise such as weight training or an all-out 1/4-mile sprint.

So, after weight training exercises or a post-workout sprint, don't stop abruptly and plop down on the nearest chair! Continue to walk around and gradually allow your body to cool down. Also, don't forget to warm up and then stretch your muscles *before* your weight training workout that day. Finish up your workout by cooling down and gentle stretching movements.

(JC)

*The *Lifter's Press*, a U.S.-based newsletter, includes information from periodicals, authors, and health care and fitness specialists but does not necessarily sanction or support the treatment or opinion mentioned therein. For specific medical treatment or advice or specific nutritional problems or recommendations, readers should confer with their physician and a registered dietitian or a certified nutritional consultant.

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*The *Lifter's Press* promotes weight training as a healthful activity but strongly suggests anyone starting a weight training program to consult a sports medicine physician and a qualified strength/conditioning specialist.