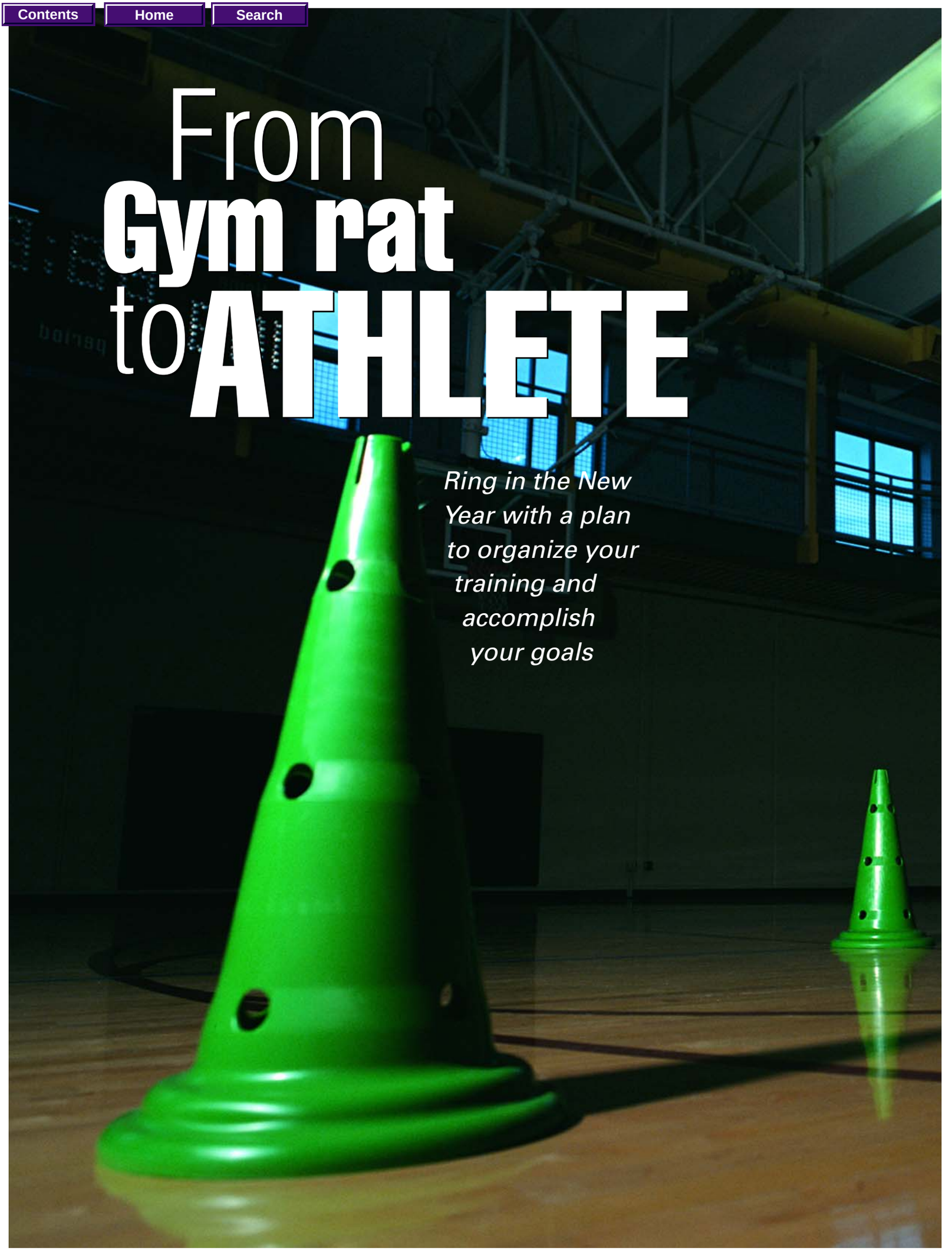


From Gym rat to ATHLETE

Ring in the New Year with a plan to organize your training and accomplish your goals

A wise man once said: If you go through life without shooting yourself in the foot, people will call you a genius. Think about it. Foresight is the act of looking a few steps ahead of your next move. Life is full of potholes and curveballs—particularly in the lifestyle department. Job stress, bad eating habits, inadequate sleep and mediocre workouts make us weak. This weakness manifests itself as a pulled hamstring during a pick-up basketball game or worse, a potentially avoidable, debilitating condition like diabetes. In order to avoid the impending exercise pitfalls of 2002, you may need to make a few adjustments. Yet, as a species, humans are reluctant to change. Like the character on the bench press, with chronic shoulder pain, who's been bouncing a 200-pound bar off of his chest for the last 10 years.

What you need is the latest science and technology to help you stand tall, with all of your toes in one piece. Any New Year's resolution is worthless without an organized plan of attack. Read on: We show you simple ways to track your progress, avoid the gym rat race and start training like an athlete.

Photography by Dennis Lane ■ **Joseph A. Arangio, M.S., C.S.C.S.**

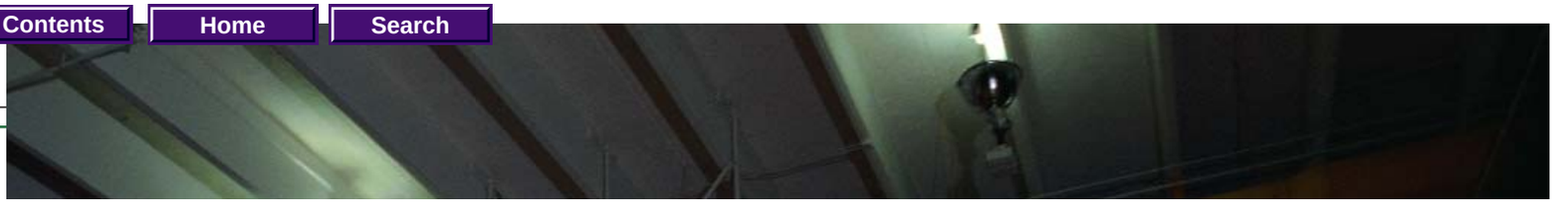
DON'T BE A SISYPHUS

Sisyphus (sis-uh-fuhs) was a guy in classical mythology who annoyed the wrong people and was forced to spend eternity rolling a gigantic boulder to the summit of a steep hill. Just as he pushed the huge stone to the peak, it would roll back down the hill and Sisyphus would have to start over. Metaphorically, this ancient weight lifter exerted a lot of energy to accomplish very little. Resistance training should not be an effort in futility.

"Conservatively, 90 percent of routine gym-goers think quantity equals quality," says Chris B. Cox, M.S., C.S.C.S., a Pennsylvania-based exercise physiologist. Marathon cardiovascular sessions on the treadmill, set after set of the same exercises performed with less-than-perfect form and little or no flexibility activity hinders the progress of the enthusiastic, yet misinformed masses. Cox suggests completing exercise in a timely manner and with proper technique, to reduce the chance of injury. "If you can't accomplish your workout in under one hour, you're spending too much time at the gym," adds Cox.

PLANNED RESULTS

Unless you are genetically gifted with a strong, healthy body, then success in the new millennium requires a careful strategy. Changing your program, called *periodization*, is the answer. This concept of thoughtful preparation will help you achieve measurable results—not just over the next 12 months, but for the rest of your life. Your workout program is not a dice game; it should be founded in science and common sense. We contacted Tudor Bompa, Ph.D., author of *Periodization: Theory and Methodology of Training.* Dr. Bompa is recognized as the world authority on the concept of periodization—which he developed in Romania in the early 1960s. He advises athletes to manipulate training variables every few weeks in order to take advantage of your time in the gym.



Choice of Exercise. Next time you're in the gym, try a barbell incline chest press instead of the traditional barbell flat chest press. "In some cases, changing the angle of an exercise will *functionally* change the exercise," says Dr. Bompa.

Choice of Order. This is possibly one of the most overlooked program variables, according to Dr. Bompa. The sequence of exercises can make a simple workout very intense. A barbell back squat is arguably the best all-around movement in the gym. Most gym-goers perform the squat, followed by a leg extension and leg curl, in order to target the quadriceps and hamstrings, respectively. Reverse the order of exercises—leg curl, leg extension, squat—to increase the difficulty of your next workout.

Number of Sets. The number of sets in a workout is dependent on a few factors: your level of ability (beginner or advanced), amount of exercises performed and the total muscle groups trained in a workout. As a general rule, choose a higher number of sets when few muscle groups are involved. This will help you avoid the counterproductive, two-hour workout.

Number of Repetitions. A repetition is a complete shortening and lengthening of the muscle. Scientists have determined that low reps (1 to 8) elicit a strength response, while higher reps (12 to 20) cause an improvement in muscular endurance. A good rule of thumb, says Dr. Bompa, is to do 10 to 12 reps if hypertrophy (muscle growth) is your goal.

Rest. Recovery is important between sets of an exercise, between exercises and especially between workouts. Dr. Bompa recommends resting 30 to 60 seconds between sets if muscle size is your goal and 3 to 5 minutes for increased strength. Remember that exercise is a stressor that forces muscle to grow bigger, stronger and faster. A number of factors including age, nutrition, stress and sleep affect how quickly you recover from your last workout. "You may be young at heart, but it's a physiological fact that older athletes take longer to recover," says Douglas Brooks, M.S., exercise physiologist and author of *Effective Strength Training*.

Frequency. How many times you train during the week is a topic of controversy. Beginners experience a positive response to resistance training with as little as two workouts per week. Success is about longevity—a three- to four-day-per-week training frequency is conducive to a lifetime of exercise. In this case, less is more.

Volume. The total amount of activity you perform each workout (sets x reps x exercise) is called volume. Recovery between workouts is influenced by this index. It makes sense to follow a high-volume training week with a week of lighter volume activity, to prevent overuse and possibly injury.

Intensity. Coaches use various scales to determine intensity or quality of effort. Cardiovascular intensity is measured by a percentage of your age-predicted maximal heart rate (220-age x 60-80%). In resistance training, 100 percent intensity is your best performance during an exercise. When executing an exercise with all-out effort (overload or failure), pay strict attention to your form. Poor technique will do more harm than good. Every so often, reduce workout intensity after a week of high-intensity training.

TECH REVIEW

You examine your profile in the mirror, hop on the scale or measure your flexed biceps to determine if the long hours in the gym are paying off. Sure you feel better, but you want conclusive evidence to state the fact.

Recent technological advances continue to revolutionize the way we collect, assess, use and communicate the backlog of fitness data. Opportunistic companies have created computer software to track workouts and diet—most of which can be performed on a simple spreadsheet from a handheld device. However, one company stands above the competition. **HealthFirst's TriFit 600** (www.healthfirstusa.com) combines computer hardware, data-management software and a number of integrated testing accessories, such as a wireless Polar Heart Rate Monitor, a bicycle ergometer, flexometer (to measure trunk and hamstring flexibility) and digital skinfold calipers. Once your data is entered directly into the system, you can obtain a detailed report that compares you to your peers. Better still, a coach can track your personal progress by comparing multiple tests. Colorful graphs illustrate how well your cardiovascular conditioning has improved since you began interval training last year, for example. Plus the peripherals are linked directly to the computer, so you don't have to worry about mistakes due to tester error.

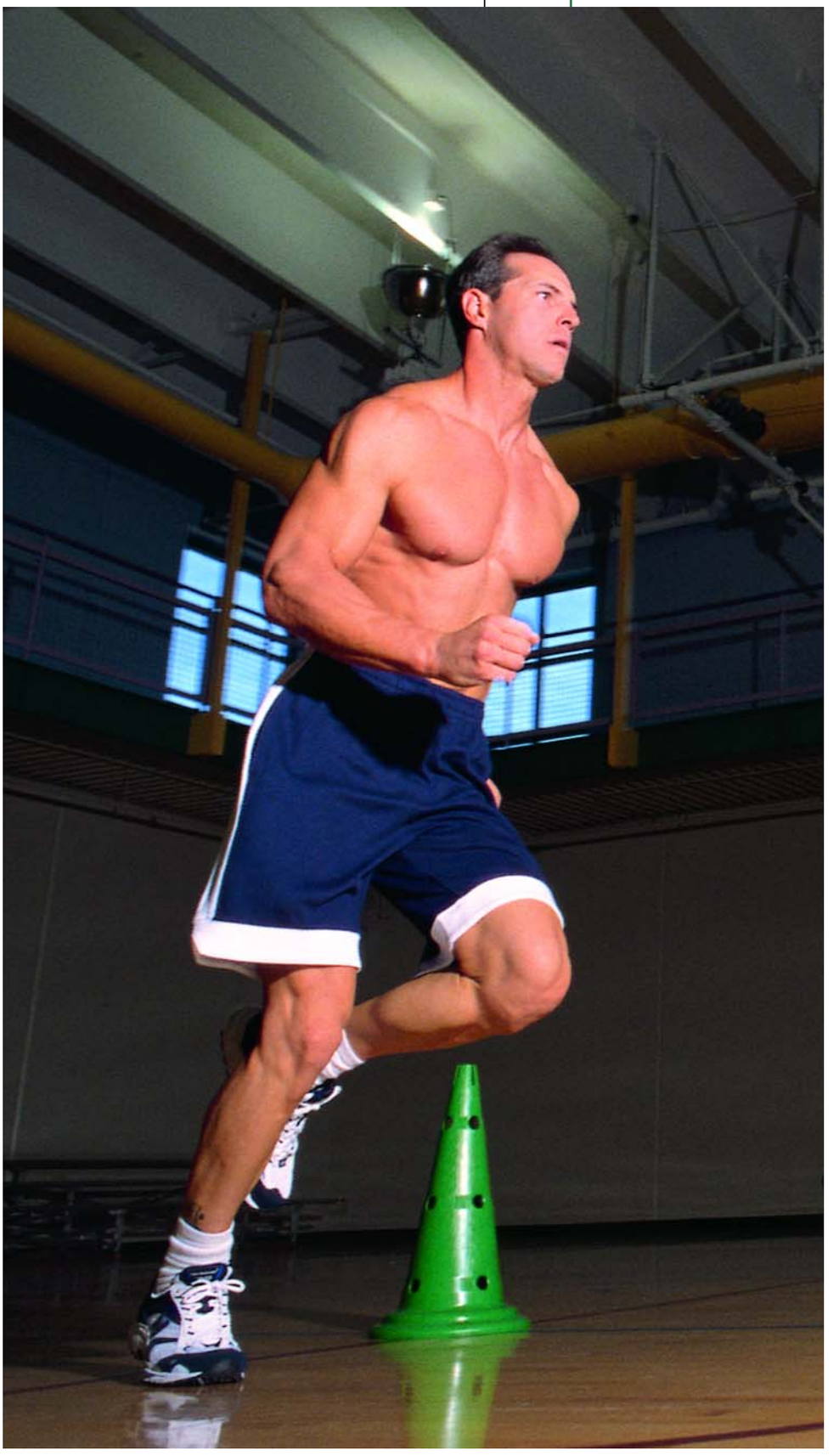
Armed with this technology, you become your own science experiment—gym rats transform into lab rats. An experienced coach should retest you on a regular basis, evaluate the success of your workouts and modify your training protocol, in order to achieve your desired goals.

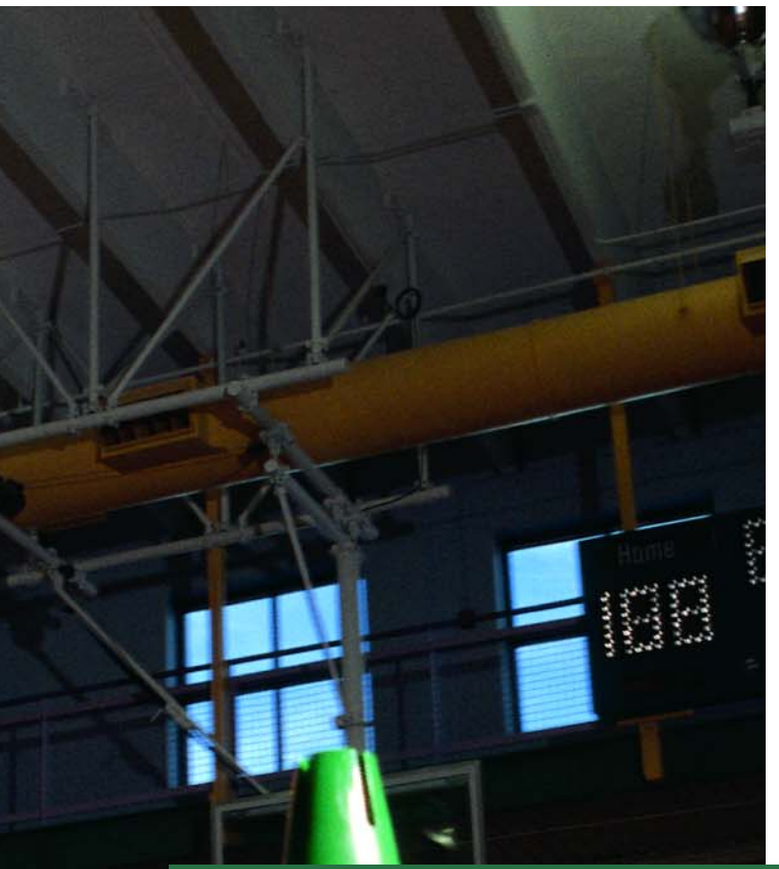
FITNESS EVOLUTION

If you exercise regularly, then you undoubtedly have heard many different opinions regarding the best training techniques. Three sets of 10 or 10 sets of three? Super-slow or explosive? Full range of motion or partial? Opinions will differ as long as people continue to question and debate these ideas. While some theories are simply a marketing ploy by an overzealous, potentially insane person selling the latest ab-cruncher on a late-night fitness infomercial, others are based on a recurrent theme: The personal trainer-guy with really big biceps offers advice, based on the fact that he has really big biceps.

The good news is the strength and conditioning field has undoubtedly evolved over the past three decades. Volumes of research bridge the gap between science lab and gym. Experts have translated complex biomechanics, biochemistry and physics into user-friendly recommendations for the practical application of this newfound research. One of the most important findings is the benefit of regular exercise testing. "The ability to measure changes (outcomes) resulting from your exercise protocol will help both you and your coach determine what formula works best for you," says Cox. Like a routine physical at your doctor's office, a properly performed fitness assessment may be one of the best ways to enhance your performance in and out of the gym.

Be sure to use caution when choosing your tester. Nowadays many commercial gym memberships include a brief fitness orientation session. Armed with skinfold calipers, tape measures and questionnaires, these "fitness professionals" poke, prod and finally create a generic, one-size-fits-all workout program. Follow-up rarely occurs and, if it does, most facilities have no means of quantifying the information. Unless you take the time to measure where you've been, you'll never know where you're going.





TRACK YOUR PROGRESS

If you are interested in making the most out of your gym membership, start thinking like an athlete. This means recruiting a college-degreed, certified strength and conditioning professional to create an appropriate exercise program, based on your physical condition, level of ability and motivation. Once your doctor has determined that you are healthy enough to exercise, your coach should perform a battery of tests and measurements before you start training and every six months thereafter. This way you can track progress over time—and you'll not only feel like you're accomplishing goals, but you'll *see* improvement on paper. Your exercise physiologist should assess the following parameters during a fitness evaluation:

- Vital signs (resting heart rate and blood pressure)
- Aerobic power (3-minute step test)
- Flexibility (sit and reach test)
- Anthropometry (circumference measurements)
- Body composition (skinfold measurements)

Try these advanced tests only if you have clearance from your doctor:

- Anaerobic power (line drill a.k.a, "gassers")
- Agility and body control (T-test)
- Anaerobic power (vertical jump)
- Running speed (40-yard sprint)

Advanced field tests

Remember that you are competing against yourself. Perform the same tests again in six months to determine your progress.

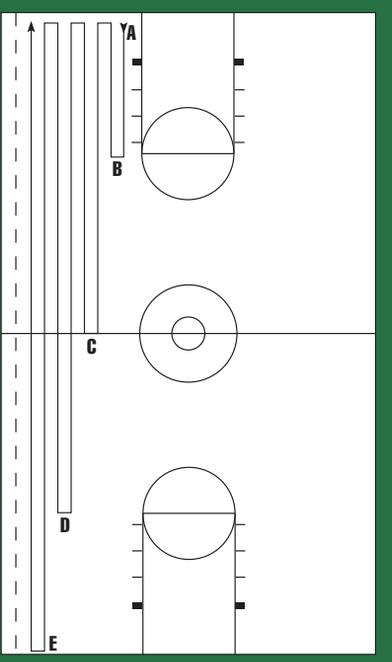
LINE DRILL (GASSERS)

You'll need a lined (college or high school-regulation) basketball court and a stopwatch. On your coach's start command, sprint from the baseline (point A) to the near free-throw line (point B). Touch the free-throw line with the foot and immediately sprint back toward the starting position. After touching the baseline, sprint to the following positions without stopping: midcourt line (point C) and back; far free-throw line (point D) and back; far baseline (point E) and back. The total distance is 470 feet for college and 420 feet for high school. Perform a total of four sets with exactly two minutes of rest between trials. To obtain your score, sum all four times to the nearest second and divide by four.

Tip: Warm up for at least five minutes to reduce the chance of a sprain or strain.

Tip: Perform a trial run at half-speed before the test.

Tip: Be sure to touch all of the points.

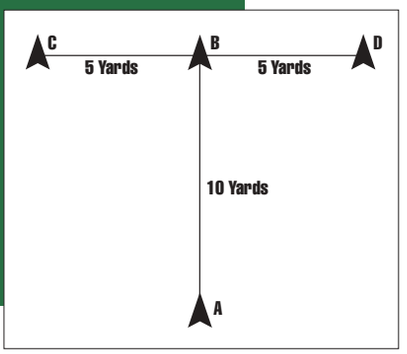


T-TEST

Arrange the four cones as shown in the diagram. Be sure to warm up before attempting the test. At the start command, sprint from point A to point B and touch the cone at the base. Immediately shuffle to the left and touch the cone at point C with the left hand. Now shuffle to the right and touch the cone at point D with the right hand. Shuffle to the left and touch point B with the left hand and immediately run backward, past the start point A. Record the better of two trials, to the nearest 0.1 second.

Tip: When shuffling, always face forward and do not cross the feet.

Tip: To reduce the chance of injury, your coach should remain at the start point to catch you in case you become unstable.



40-YARD SPRINT

Mark off 40 yards of safe running space. After thorough warm-up and stretching activities, perform two trial runs at half-speed. Now position yourself behind the start line with one or both hands touching the line. On the start command, sprint through the finish line. To obtain your score, sum both trial times to the nearest 0.1 second and divide by two.

Tip: Allow for an additional 20-yard cushion after the finish line to avoid injury.

VERTICAL JUMP TEST

Place gym chalk (sodium bicarbonate) on the fingertips of your right hand. Position yourself with the right shoulder next to a wall with a high ceiling and safe landing area. Without jumping, keep the soles of your feet in contact with the floor, reach as high as possible and make a chalk mark on the wall (this is point A). Next, lower the right hand, bend the knees and jump as high as possible. At the height of the jump, place another chalk mark on the wall (point B). Measure the distances between the two chalk marks. To obtain your score, record the best of three jumps to the nearest 0.5 inches.