

S C H O L A S T I C

Coach

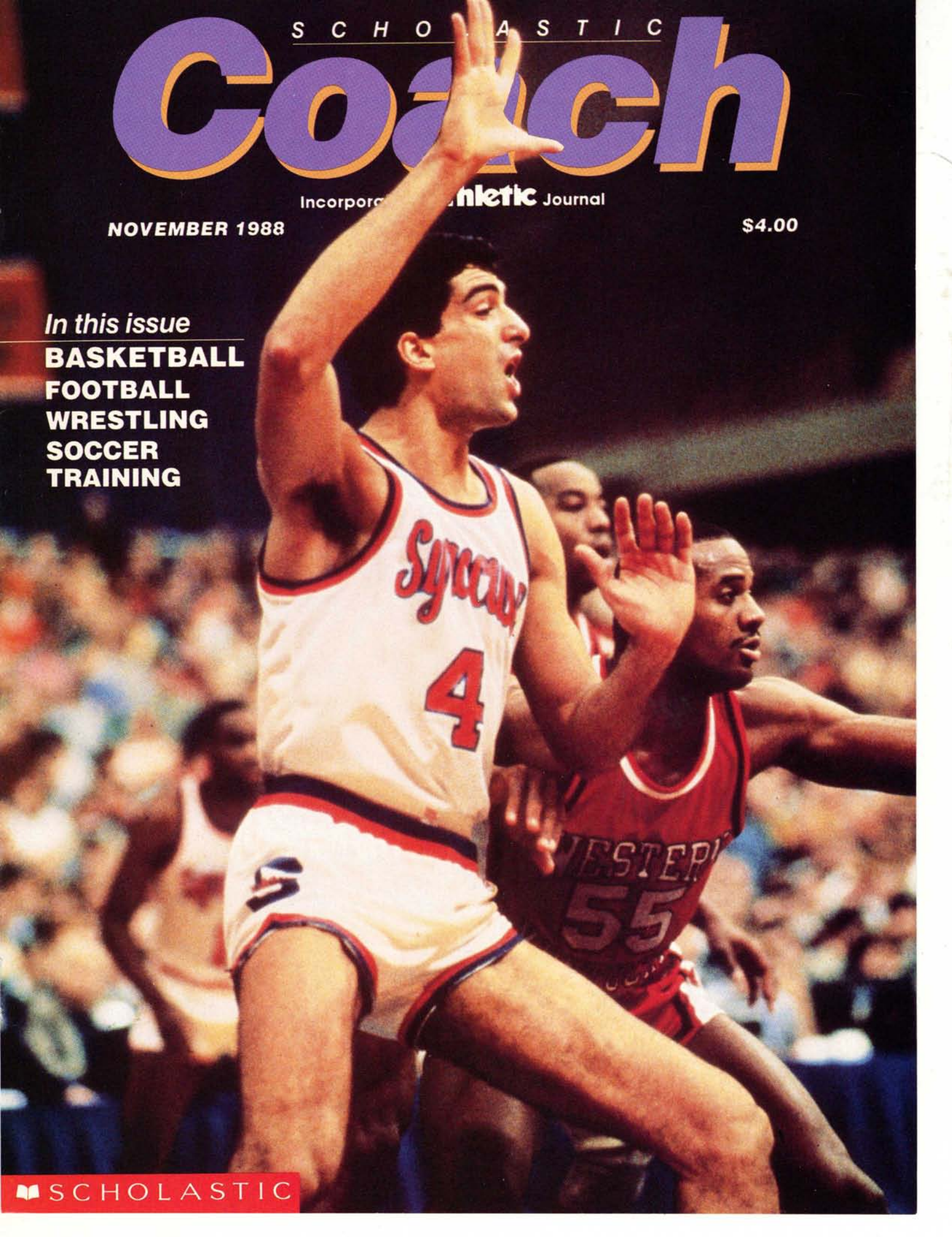
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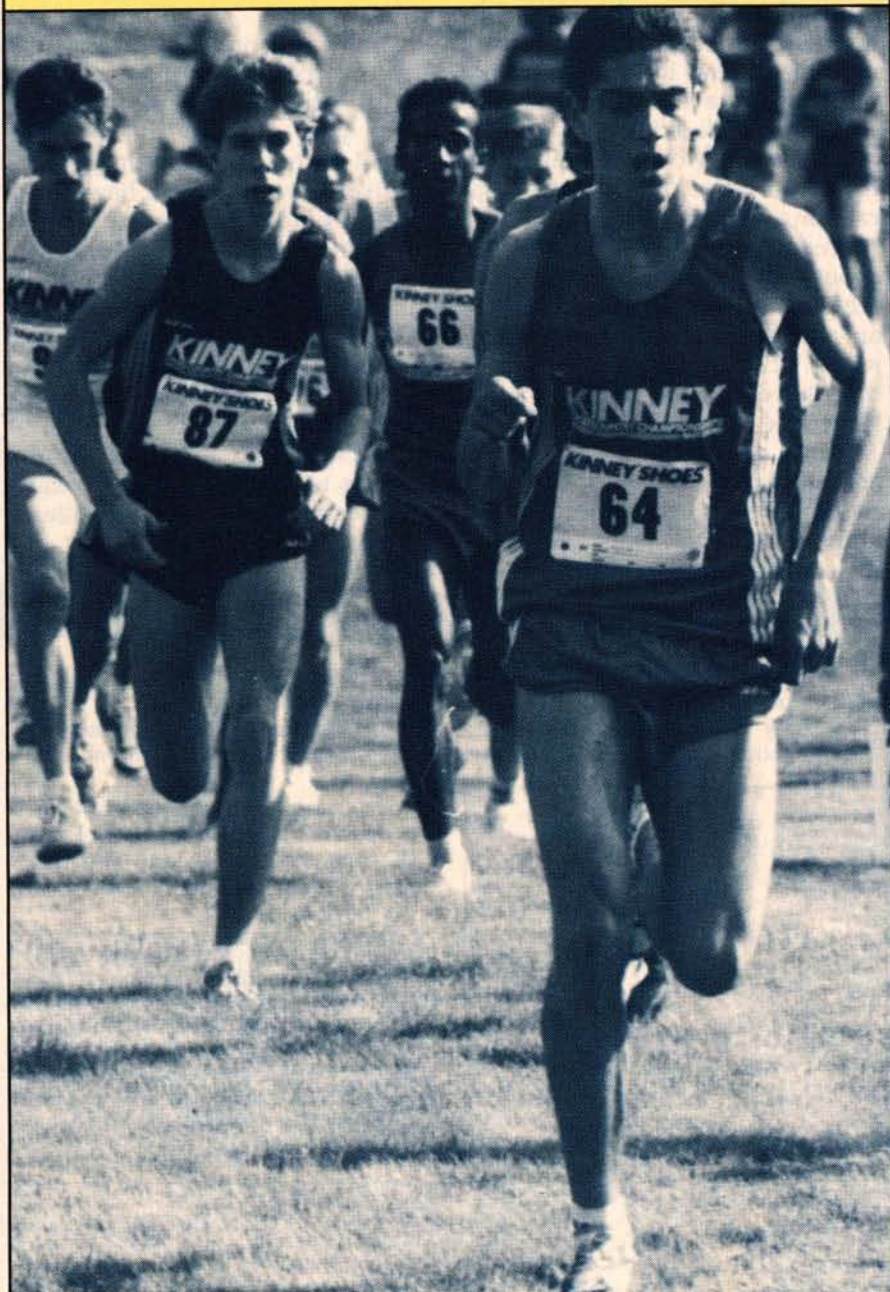
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HAZARDS OF EXPLOSIVE TRAINING

**There is absolutely no proof
that lifting weights will make
your athletes more explosive**



ONE of the most hotly debated subjects in strength training is the speed at which an exercise or movement should be performed. Some professionals advocate high velocity/explosive movements, while others recommend deliberate movements performed in a controlled manner.

Most of the controversy centers on specificity. Proponents of the high-velocity movements argue that in order to become "explosive," you must train "explosive." Their assumption is that by lifting explosively in the weight room, you will preferentially recruit the fast-twitch fibers and/or change the chemical composition of the slow-twitch fibers.

Unfortunately, research does not seem to substantiate this belief. Training does not seem to effect fiber composition. In other words, you can't make a racehorse out of a mule!

Furthermore, muscle fibers are recruited in an orderly fashion according to the intensity or force requirements rather than the speed of movement.

Demands of low-muscular intensity are met by the slow-twitch fibers.

Intermediate fibers are recruited once the low-twitch fibers are no longer able to continue the task.

The fast-twitch fibers are finally recruited when the other fibers cannot meet the force requirements. ALL fiber types are working when the fast-twitch fibers are being used.

In short, there is absolutely no conclusive evidence that movements performed in an explosive manner will bypass the slow twitch and intermediate fibers in order to specifically recruit the fast-twitch fibers.

Momentum

The fact that high-velocity movements do not selectively recruit the fast fibers is just one of the reasons why this method of training is not recommended.

Whenever you lift explosively,

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EXPLOSIVENESS

momentum is introduced to overcome inertia and provide impetus to the weight or resistance. After the initial explosive movement, little or no resistance is encountered by the muscles throughout the remaining range of motion. The weight is practically moving under its own power.

In effect, you have less need for muscular force and so you reduce your strength gains.

More importantly, the use of momentum to lift a weight will increase the internal forces encountered by a given joint; the faster a weight is lifted, the greater these forces become.

These high forces are created at the point of explosion. When these forces exceed the structural limits of a joint, they will cause injury in the muscles, bones, or connective tissue.

The effects of high-speed movements can be demonstrated rather easily with an ordinary 16-ounce hammer. If you were to lay the hammer across your hand, it's doubtful whether you would feel any pain. Now, if you were to lift the hammer and allow it to drop on your hand from a height of about a foot, I suspect that you could hurt a bit.

Why would dropping a hammer on your hand cause significantly more pain than resting a hammer on your hand? After all, the weight

of the hammer remains unchanged.

The answer has to do with velocity. A hammer resting on your hand has a velocity of zero; by dropping the same hammer, you would increase its velocity and, in effect, magnify its force.

Assuming that an object's mass (or weight) does not change, the exact amount of potential force is directly related to the object's acceleration. In other words, as the speed of movement increases so does the potential force.

That's not merely an opinion or theory. It is based on a fundamental law of physics, namely Newton's Second Law of Motion.

The potentially destructive forces created by high-velocity movements is illustrated literally every minute on our nation's roadways. Though not all automobile accidents are due to high speeds of movement, few individuals would disagree that a slower speed would reduce the risk of injury.

Let's face it, would you rather get hit by an object moving at a high rate or a slow rate of speed?

I recently had a lively discussion about explosive training with another college coach. The fellow was an advocate of high-speed movements. I asked him if he thought that slower movements were safer. He replied "Yes."

I then asked, "If slower speeds make an exercise safer, doesn't that also mean that faster speeds make the exercise more dangerous?"

His reply was "Yes, but sports are dangerous. Should we stop playing sports?"

I agreed that many sports are inherently dangerous, but that does not justify prescribing potentially dangerous techniques in the weight room.

It's rather obvious that explosive movements are unproductive and potentially destructive. Anyone who doesn't believe that an injury can occur from a ballistic movement has apparently never heard of a whiplash!

Absolutely no one knows exactly how fast an exercise should be performed. It must certainly differ from one individual to another and probably even varies within the same person from one week to the next, depending upon his current level of conditioning.

At any rate, one thing is for sure: It's much safer and more efficient to lift weights under control. Require your athletes to raise the weight without any jerking or explosive movements and have them lower the weight under control.

Raising the weight in one to two seconds and lowering the weight in three to four seconds will ensure that the speed of movement is not ballistic in nature and that momentum does not play a significant role in the efficiency of the exercise.

Coaches who encourage their athletes to "explode" with a weight are begging for musculoskeletal suicide.

FOOTBALL DRILL OF THE MONTH

FADE DRILL

By LOUIS (SONNY) LUBICK

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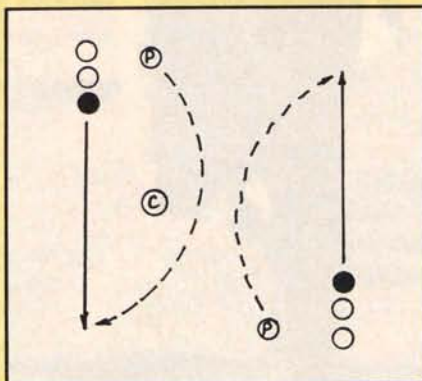
Purpose: practicing the proper mechanics of throwing the long pass with special emphasis on trajectory.

Procedures:

1. Align a quarterback (passer) on both sidelines at 50-yard line.
2. Position a line of receivers on each sideline 15 yards to right of each passer.
3. Have other passers (P) stand adjacent to sideline areas.
4. On passer's command, first receiver in each line runs across field

at 3/4 speed and catches high trajectory pass thrown by qb.

5. After catching pass, receiver returns football to passer at that end



of field and moves to back of that passer's receiving line.

6. Continue drill until all passers have thrown a sufficient number of throws.

Drill variations: You can vary the distance at which the receivers line up from the passer, and you can use the drill as a wide receiver practice device.

Reprinted from the 300-page definitive coaching drill handbook, "The American Football Coaches Guide Book to Championship Football Drills," by Jerry R. Tolley. Total price: \$16.95. Make check payable to AFCE-Football Drill Book, and mail to Jerry R. Tolley, P.O. Box 463, Elon College, NC 27244.