Coaching Women's Basketball

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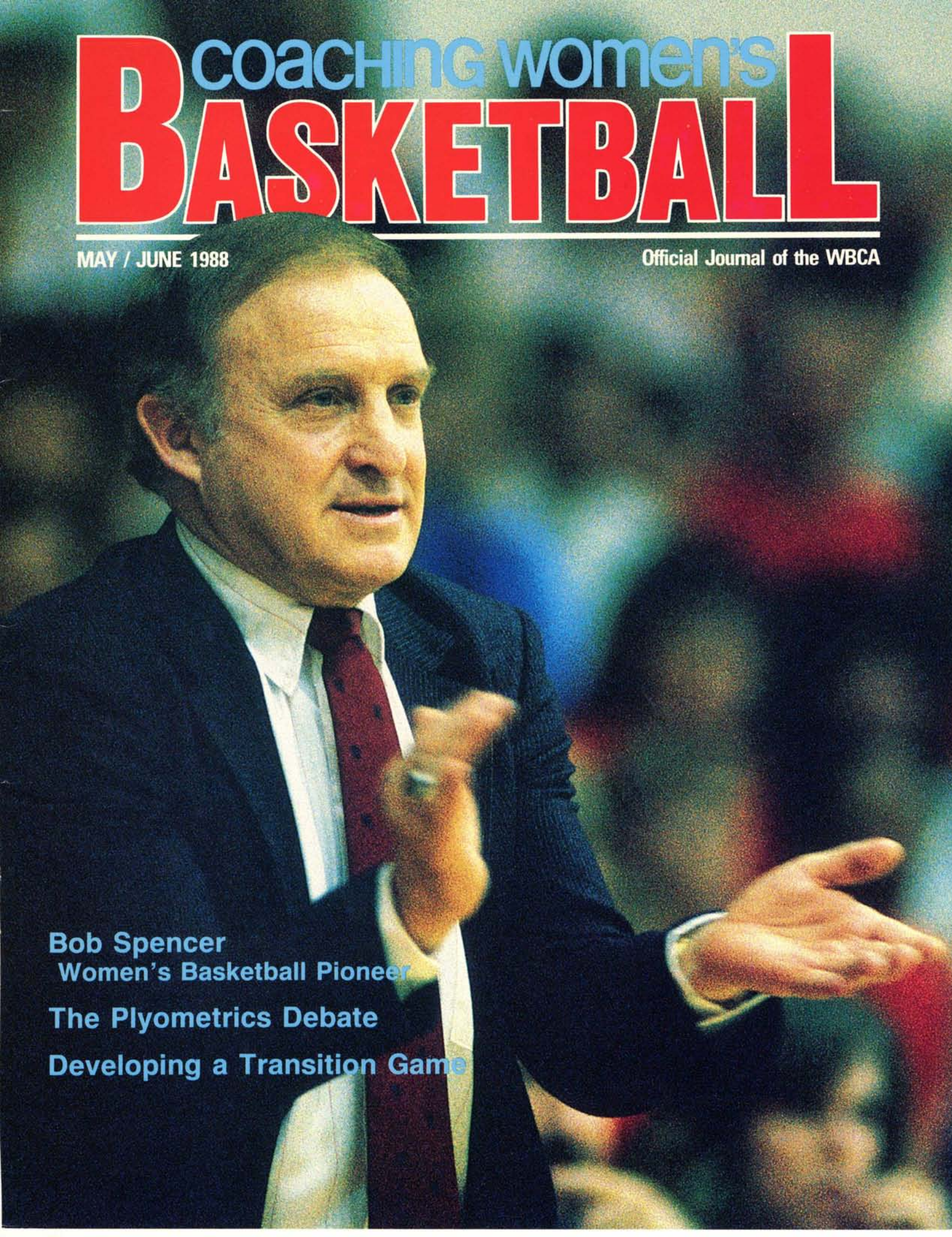


Bob Spencer
Women's Basketball Pioneer

The Plyometrics Debate

Developing a Transition Game

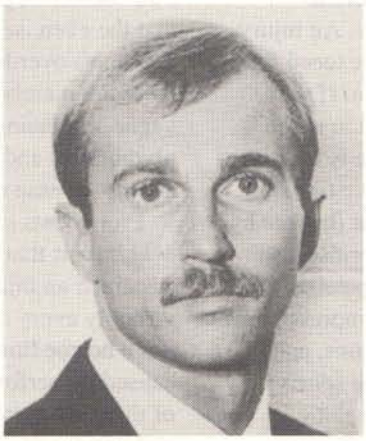
The Plyometrics Debate

The down side of plyometrics

By Matt Brzycki, CSCS

At first glance, plyometric training appears to be a rather innovative idea based on scientifically documented principles. Unfortunately, it is not without its share of controversy. It seems as if a great deal of misleading information, half-truths, and confusing rhetoric surround plyometrics. For example, "experts" on the subject are eager to point out that plyometrics "bridge the gap between strength and speed." However, no one ever explains exactly what this rather nebulous description means.

Furthermore, most of the accolades showered upon plyometrics are centered on the erroneous protocol of biased research or on personal anecdotes. One well-known advocate of plyometrics admits that reliable studies are difficult to conduct because of the many uncontrollable variables. Additionally, personal success stories offer little conclusive evidence as to the effectiveness of plyometric drills. For example, although the 1987 Super Bowl champion New York Giants use plyometrics, the 1988 Super Bowl champion Washington Redskins do not.



Matt Brzycki

The belief that you can train the elastic properties of tendons and muscle tissue to become more efficient at storing energy is scientifically unfounded. No conclusive evidence exists to suggest that plyometrics are a productive method of training. Quite simply, there's no definitive proof.

Are plyometrics safe?

Because of the repetitive, ballistic nature of plyometric exercises, the potential for traumatic injury is extremely high. In fact, many prominent sports medicine doctors, physical therapists, and athletic trainers view plyometrics as "an injury waiting to happen." When performing plyometrics, the musculoskeletal system is exposed to

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Plyometrics are safe and beneficial

By Kim Goss, CSCS

Plyometric exercises can improve an athlete's speed, agility, and power with little risk of injury. At the Air Force Academy we've experienced excellent results from our plyometric programs, and this year injuries from this form of training were practically nonexistent. However, despite an abundance of credible research and empirical evidence, plyometrics have their critics.

One of the most outspoken opponents is Matt Brzycki, an assistant strength coach at Rutgers University in New Brunswick, New Jersey. In the January 1988 issue of *Athletic Business* Brzycki offered this warning: "If athletes currently use plyometrics, encourage them to stop immediately. If not, a coach may be ending two careers—an athlete's by injury and his or her own by lawsuit."

Kim Goss

Before examining injuries that can result from plyometric exercises, I must explain that to be antiplyometrics is to be antisports. The stretch reflex, a powerful muscular response that is an integral part of the plyometric effect, occurs in virtually every athletic movement. In sports that require exceptional power, such as gymnastics, specialized plyometric exercises are the mainstay of training. What a coach must learn is how to safely incorporate additional sports-specific plyometric exercises into athletes' training programs.

The most likely reason for an athlete's acquiring an injury from plyometrics is by an underestimation of their intensity. Many plyometric drills seem so easy the athlete doesn't feel like he or she has performed any significant work. But plyometrics do place a great deal of stress on the nervous and musculoskeletal systems; if a coach is not careful, the likelihood of overtraining and injury is high.

In an April 1986 *Athletic Journal* article, "Plyometrics: A Giant Step

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extreme biomechanical loading. The muscles, bones, and connective tissue act as natural shock absorbers to dissipate the imposed stress. An injury occurs when these stresses exceed the structural integrity of a joint. If you stretch a rubber band with too much force it will snap. The same is true of your muscles and connective tissue.

Potential injuries include (but are by no means limited to) heel bruises, shin splints, meniscal damage, patellar tendinitis, and vertebral compression as well as various sprains, strains, and stress-related fractures. One sports medicine doctor feels that sciatic conditions and even a loss of motor ability may result from plyometric training.

Remember when aerobic dancing was introduced? Most fitness enthusiasts eagerly accepted this form of conditioning with few reservations. Within the past few years, however, it's become commonplace to hear about overuse injuries directly related to the pounding absorbed by the body while jumping up and down. Today, the concerns for these inherent dangers are reflected by the advent of so-called "low impact" aerobics.

If people have suffered traumatic injuries from jumping up and down a distance of several *inches*, imagine how dangerous it is to jump up and down several *feet!* Obviously, the body's framework absorbs tremendous force on impact from a jump of even the shortest of suggested heights. This force is magnified as the height of the jump increases. Incredible as it may seem, one internationally known plyometrics guru advocates "altitude jumps," which he describes as stepping off a box or a platform from a height of 5 to 9 feet, landing on the ground, and jumping up as high as possible! (I wonder if the survivors are awarded jump wings?)

Young athletes are especially prone to trauma because their musculoskeletal systems are relatively immature. The epiphyseal plates of their long bones haven't fused yet, making the head and neck of the femur especially vulnerable. Plyometric training may also aggravate Osgood-Schlatter disease in adolescents.

The experts generally caution that you should be "in shape" or "in condition" before beginning plyometrics and that the exercises are safe "as long as you don't overdo it." Precautions like these are merely more examples of the vague, confusing rhetoric characterizing plyometrics and represent a feeble attempt to ease one's fears.

Proponents of plyometrics rarely, if ever, report that any of their athletes sustained an injury while training. Yet virtually every athlete I've talked with has a horror story of personal injury caused by performing plyometrics. Most of these athletes suffered sprains, strains, and various overuse injuries. One athlete required ankle surgery. As a matter of fact, as I was preparing my notes to write this article, one of our athletes noticed the word "plyometrics." He commented, "Wow, that's some good stuff. I really hurt my ankle doing those things."

Oddly enough, most authorities on plyometrics recommend that you should stretch under control without any bouncing or ballistic movements in order to avoid injury. While this is indeed highly advisable, isn't it contradictory then to advocate plyometrics, the most violent form of stretching?

In short, it seems doubtful that plyometrics can be viewed as a safe conditioning modality. Sooner or later, bounding down the track will send you limping to the doctor.

Final concerns

The old adage, A little bit of knowledge is a dangerous thing, certainly seems appropriate concerning plyometrics. In their haste to gain the "competitive edge," people are easily influenced by the claims of successful coaches and athletes as well as by the latest "research" from the Soviet Union.

Unfortunately, most people do not evaluate this information critically to determine whether the advice is practical, efficient, productive, and safe. It is assumed to be simply because the "authority" had plenty of letters after his name or an impressive job title.

There are no "secret" training techniques—just people who believe so. How many coaches have their athletes jumping up, down, and over boxes and tossing medicine balls in the air simply because "the Russians do it"? It must look more like the Moscow circus than a training regimen.

It has never been proven that the stretch reflex responds to training.

Any coach who recommends potentially dangerous activities such as plyometrics is violating a legal duty. . .

However, even if plyometrics training were a productive method of stimulating gains in explosive strength, it exposes athletes to an unreasonably high risk of injury.

All this talk about potential injuries and concern for individual safety naturally raises the issue of negligence. In simple terms, negligence occurs when a coach fails to act as a reasonable and prudent coach would act in a similar situation. If a coach is sued and brought to trial, a judge or jury determines the appropriateness of the coach's actions.

According to the law, coaches are responsible to provide athletes with programs that are safe. Any coach who recommends potentially dangerous activities such as plyometrics is violating a legal duty and could be found negligent if an athlete is injured in the process. In short, don't recommend plyometrics if you're a coach, and don't use them if you're an athlete. It's not worth the risk of being a human shock absorber.

Matt Brzycki is assistant strength and conditioning coach at Rutgers-The State University of New Jersey. He is a certified strength and conditioning specialist and has published numerous articles on strength and conditioning.