

Problems with dietary supplements that may result in harm to the athlete:

- In 1994, the Dietary Supplement Health and Education Act stopped the FDA from directly monitoring dietary supplements. Medical concerns include questions that are difficult to answer without research, such as: Do these supplements work? What are the adverse effects/safety of use?
- Studies show that some supplements contain impurities and that they may not contain what the label states or may contain substances not on the label.
- Myths exist among young athletes that can be dangerous, such as: all-natural equals all-safe, and if some is good, more is better. □

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# Sports Health & REHAB CENTER

On The Canal

December 2004

## Low Back Instability

By Scott McMillen, D.P.T.  
Allied Health Rehab Centers



Low back pain continues to be one of the most common complaints today of patients seen by orthopedic and sports medicine doctors as well as by physical therapists. It has been estimated that up to 80% of the people in this country will have complaints of low back pain. Ten million people are off work every day because of back pain and these missed days will cost U.S. industries 14 billion dollars each year. And although the pain typically decreases, it will return in 90% of the people who have it. So why can't we treat it effectively? One reason is that until relatively recently, we haven't been able to specifically diagnose it very well; because when you say "My back hurts," that can mean a lot of different things. If we treat all those things the same way, sometimes we will be lucky enough to get you better, but a lot of times we will see poor results. As our skills and diagnostic techniques

improve, we are becoming better able to tell patients what may be the actual cause of the low back pain, and if we can accurately find the cause then we can effectively treat it.

One of the many causes of low back pain is spinal instability. The results of treatment of the specific diagnosis of "spinal instability" have been much the same as the results of the general diagnosis of "low back pain"—not great. And it is probably not surprising that treatment of spinal instability has produced mixed results considering that past attempts to even define spinal instability have produced contradictory observations and hypotheses. We are now beginning to understand that the spine is stabilized by three subsystems: 1. Active subsystem, which is muscle; 2. Passive subsystem, which is everything else (bones, discs, ligaments); 3. Neural control subsystem, which is our inert ability to control which muscles are being used and when. A deficiency in any one of these systems can result in spinal instability. However, if this is the case, then increasing the use and efficiency of the other two subsystems can take up the slack for the system that is lacking. Generally if the spine is unstable, it is because the passive subsystem is deficient. This can occur as a result of a laxity in the ligaments supporting the spine, from degeneration of the vertebral discs, or from a spondylolisthesis, which is a small fracture in the vertebrae from repetitive loading.

*Scott McMillen*



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Re-stabilizing the passive subsystem can be achieved surgically by a lumbar fusion, as a last resort, or we can increase the effectiveness of the active and neural control subsystems to make up for the lacking passive subsystem. This is where physical therapy comes in. Luckily, we can have an effect on muscle and neural control. The goal of therapy in this case becomes the enhancement of the active subsystem (strength of the musculature) and the neural subsystem (motor control of the trunk musculature) in order to compensate for the deficient passive subsystem. Therapy in this case begins with strengthening the abdominal muscles, specifically the deep abdominal muscles, not the muscles closest to the surface that give you a “six-pack.” In fact, it has been shown in studies that individuals with chronic low back pain and/or lumbar instability often have a different pattern of abdominal muscle activation as compared to individuals without back pain, and that patients with back pain are often unable to selectively activate the deep abdominals. In therapy, we now attempt to teach patients exercises that allow them to selectively activate their trunk stabilizers and to then activate them in an optimal sequence when performing functional activities, especially those activities that cause pain. Studies show that these deep abdominal muscles are active in an “anticipatory” role during functional activities before the primary muscles used for the activity become active. It has also been shown that this is often not the case in people with low back pain and, therefore the patient with back pain may have to be taught to consciously activate the deep stabilizers before his/her neuromuscular system learns to do it unconsciously and “takes over” the job. Hopefully, the end result of proper therapy is muscles that are not only stronger (the active subsystem), but muscles that fire at the appropriate time to provide control to the spine when performing strenuous activity (the neural control subsystem). This will lead to increased stability and control in the low back and, more importantly to the patient, less pain. □

## Performance Enhancement Supplements

By: Joseph Congeni, M.D.  
Akron Children's Hospital



Our society is founded on competition and places much value on success. This leads to pressures producing a “win-at-all-costs” mentality. Teenagers feel these pressures and often look for the “edge” from drugs and supplements, even if they are illegal or unsafe. Many coaches feel this leads to a “shortcut” type mentality rather than using hard work to improve. Athletes, parents, coaches, and trainers need to know that a sensible strength and conditioning program and a well-balanced diet with proper hydration are a reasonable alternative to a riskier shortcut training approach. Virtually no data are available on the efficacy and safety of widely used performance-enhancing substances in children and adolescents. The American Academy of Pediatrics strongly condemns the use of performance enhancing substances and vigorously endorses efforts to eliminate their use among children and adolescents.

### Anabolic-androgenic Steroids

#### **Proposed Effect:**

- Build muscle
- Increase strength
- Improve performance

#### **Medical Research:**

- Not proven to improve performance
- Increase muscle strength and mass at high doses
- Does not increase endurance

#### **Medical Risk:**

- Shrink testicles and cause increased breast tissue
- Deepen voice, increase facial hair in females
- Increase risk of heart attack by increasing blood pressure and cholesterol, possible effect on heart muscle
- Liver swelling, jaundice, and tumors
- Risk of tendon rupture
- Stunted growth in young athletes
- “Roid rage”/aggression, addiction, depression, balding, acne, stretch marks

#### **Rules/Legal Issues:**

- Illegal and punishable as a felony
- Schedule III controlled substances
- Banned by major sports governing organizations

### Androstenedione (Andro)

#### **Proposed Effect:**

- Build muscle
- Increase strength

#### **Medical Research:**

- Not proven to build muscle, increase strength, or improve performance
- May build muscle if high does taken frequently

#### **Medical Risk:**

- Same risks as steroids when taken frequently at high levels
- Increase female hormone: Estrogen
- Increase certain type of malignant tumors

#### **Rules/Legal Issues:**

- Banned by major sports governing organizations
- Food and Drug Administration (FDA) ban on manufacture, market, distribution of Andro (March 2004)

### Ephedra

#### **Proposed Effect:**

- Burns fat
- Delay fatigue in workouts
- Is a stimulant

#### **Medical Research:**

- Works as stimulant
- Effective in “fat burning” when combined with caffeine

#### **Medical Risk:**

- Sudden Death
- Heart Attack
- Stroke
- Seizures
- High blood pressure

#### **Rules/Legal Issues:**

- Systematic use banned by major sports governing organizations
- FDA ban on sales of Ephedra (April 2004)

### Creatine

#### **Proposed Effect:**

- Delays fatigue in workouts
- Promotes weight gain

#### **Medical Research:**

- Increase workout capacity for certain weight lifting/sprinting type activity
- Increases weight (mainly “water” weight)
- Does not increase strength or build muscle
- Does not improve endurance (distance event)

#### **Medical Risk:**

- May cause “Kidney Overload” in certain settings
- Dehydration
- Muscle cramps
- Stomach cramps

#### **Rules/Legal Issues:**

- Not banned for use
- National Collegiate Athletic Association prohibits distribution in training facilities
- Purchased over-the-counter as dietary supplement
- Cost may discourage use
- Creatine can be obtained through diet

### Protein Supplements

#### **Proposed Effect:**

- Promote weight gain
- Build muscle strength/mass

#### **Medical Research:**

- Does not build muscle strength or mass
- Weight gain is variable and depends on the athlete’s routine diet and calorie and carbohydrate intake.

#### **Medical Risk:**

- “Kidney Overload” when taken in high concentration.

#### **Rules/Legal Issues:**

- Not banned by major governing bodies
- Cost may discourage use
- May be expensive insurance policy for dietary deficiencies