



High Intensity Training

By James C. Smith

High Intensity Training, or H.I.T., refers to a type of resistance training exemplified by one set of an exercise where an individual reaches momentary muscular failure. Multiple sets can be utilized when necessary. A basic concept behind resistance training is there are three main types of skeletal muscle contractions: concentric, eccentric, and isometric. A concentric muscle contraction refers to a contraction where the muscle shortens. An eccentric muscle contraction refers to a contraction where the muscle lengthens. An isometric muscle contraction refers to where the muscle is momentarily held in its contracted state. Every repetition in the H.I.T. system is performed in a controlled and deliberate manner, working all three of these muscle contractions and performed through a full range of motion. This enables the athlete to recruit the maximum amount of muscle fibers found within a given muscle group and also eliminates the aid of gravity and momentum in a movement, allowing the muscles to perform the work.

The most important aspect of any type of training whether it be speed or strength training is injury prevention. Coaches should not only focus on technique in speed drills and strength movements, but also educate athletes on how to perform these movements efficiently from a bio-mechanical standpoint. H.I.T. goes along very well with from an injury prevention perspective. Jeremy Scott, Assistant Strength and Conditioning Coach/Speed Coach, for The Pennsylvania State University, states, "High Intensity training stresses the importance of controlled repetitions. Controlled repetitions will accentuate the tension placed on the muscles involved in a given movement, especially in the eccentric contraction. Eccentric contractions help strengthen tendons around a joint leading to a lower risk of injury. Negative repetitions, or lowering a weight as slow as possible, is often implemented to further develop the eccentric component. This concept, along with the previously stated controlled manner, in which the exercise is performed promotes proper technique and greatly decreases the likelihood of injury in strength training and in physical activity. Also, flexibility gains are reached from the muscle groups moving through a full range of motion in this controlled manner which decreases the risk of injury.

A problem seen in the strength training community, especially with adolescents, is muscular imbalance. Far too often do athletes concentrate on strengthening their anterior muscle groups and do not take the time to properly develop their posterior muscle groups. Unfortunately, many of our high school athletes are on resistance training programs outside of our facility that consist primarily of multiple sets of bench press and squats and may not involve any sets of pull downs or leg curls. When the ratio between anterior and posterior muscle groups are grossly disproportioned, the likelihood of injury increases immensely. "At Penn State, muscular balance is promoted in our high intensity workouts. We do not overemphasize one movement over another," says Jeremy Scott.

Rest is another important and essential part of High Intensity Training. Most H.I.T. routines incorporate the entire body. The routines are kept brief, usually between forty and sixty minutes. Since so much work is being done during this duration, and is done at a high intensity, rest between workouts is vital. A large amount of athletes are relatively active throughout the year and overtraining is a constant concern. By using various levels of training, most athletes can avoid injuries and over training symptoms.

Athletes can have various goals for training and this particular type of training helps to create a more athletic physique. H.I.T. incorporates both the aerobic and anaerobic energy systems. In a given resistance training session, an athlete is working their muscular strength, muscular endurance, as well as their cardiovascular system. This combination gives many athletes their ideal results for their specific sport or training goal.

There are many debates to which resistance training philosophy is the best for performance enhancement. A well-rounded coaching staff uses a culmination of many different philosophies that will produce the most relevant results for individual athletes. Strength coaches should recognize that different athletes have different body types and their fast twitch to slow twitch muscle-fiber ratio also differs. Where one athlete excels in explosive Olympic lifts, another may excel in H.I.T. It is the job of the Sports Performance Coach to evaluate each athlete and set forth an exercise prescription that tailors to the strengths and goals of the individual athlete.



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