

STRENGTH AND CONDITIONING FOR THE YOUNG ATHLETE

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Physical preparation is an important component for athletes of all ages and abilities. With some sports requiring early specialization, proper strength training becomes a vital component of a young athlete's physical preparation. The main objective of resistance training for younger athletes is to develop a structurally strong, balanced, and resilient body. Achieving these objectives will enhance performance through greater movement efficiency and help minimize risk of injury and lost training time. A number of components must be considered in developing balanced and effective strength programs for younger athletes. **NOTE:** These principles can cover an athlete of 14 to 19 years of age and will vary with each individual case.

ADDRESS BIOMECHANICAL/MUSCULAR IMBALANCES

Early specialization in sport can result in dysfunction within the body due to over patterning of repetitive movements. Constant repetition of a closed motor skill in a linear plane (such as in rowing or swimming), promotes imbalances that will predispose the athlete to injury and suboptimal performance. Corrective and preventive strength work is required to help the athlete maintain proper joint alignment. This will decrease the likelihood of injury along with maintaining correct, efficient body movement.

PROPER MOTOR PATTERNING

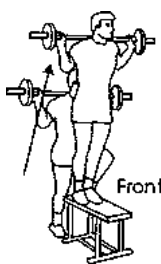
The young athlete is very pliable from a motor control standpoint. During the formative years, the athlete is best able to pattern and groove correct technique for complex movements. It is therefore important that with young athletes proper exercise technique is consistently emphasized. Incorrect lifting patterns are more difficult to correct the longer the athlete has been conducting them. Improper lifting technique can predispose the athlete to both acute and chronic injuries.

POSTERIOR CHAIN DEVELOPMENT

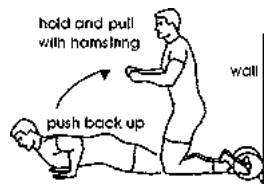
The posterior chain musculature includes the hamstring, gluteus and low back muscle groups. The muscles of the posterior chain are known as the athletic muscle groups as they are responsible for the majority of high speed athletic movements such as sprinting and jumping. The best exercises for posterior chain development are usually performed with free weights and involve the hip musculature generating the majority of the force to lift the resistance. Examples of good posterior chain exercises are: deadlift variations, Olympic lifts, Good Mornings, glute-ham raises, pull-throughs using a cable apparatus, back extensions, and hip-dominant lunges and step-ups.



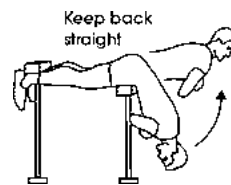
Deadlift



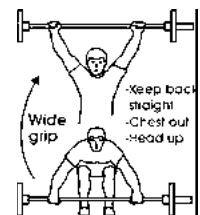
Step-up



Glute-Ham Raise



Back Extension



Olympic Lift (snatch)

POSTERIOR CHAIN ACTIVATION

Due to overdevelopment of anterior musculature many athletes have problems recruiting the muscles of the posterior chain. A common hip muscle imbalance is caused by overactive hip flexor muscles inhibiting the hip extensor musculature. This imbalance can lead to suboptimal athletic performance due to incorrect motor patterning (over-activation of the posterior chain to compensate for dominant hip flexors). This dysfunction can then predispose the athlete to lower back injury and impaired

power production. Corrective strategies should focus on encouraging proper activation of the gluteus muscles, strengthening of the rectus abdominis muscles (in isolation of the hip flexors), and flexibility work for the hip flexors, hamstrings, and hip adductors.

SHOULDER STRENGTH AND STABILITY

The shoulder girdle is another area that is susceptible to dysfunction via repetitive movements and imbalanced resistance training. The most common syndrome is a strength and flexibility dominance of the internal rotators of the upper arm over the weaker and longer external rotators. This often results in impingement of the shoulder musculature and dysfunctional muscle action. Proper movement mechanics, flexibility, and targeted exercises can help young athletes avoid these issues. Correction and prevention should emphasize both developing enhanced flexibility through the pectoral and latissimus muscles and strengthening integrated external rotation and shoulder blade retraction movements.

CORE STRENGTH AND STABILITY

The torso is the link between powerful motions occurring at the upper and lower extremities. A resilient, balanced and pliable core enables athletes of all ages to perform sports skills at maximum speed and power while reducing risk of injury. Young athletes can be introduced to core strength/stability training by performing static exercises such as front, side, and back bridging.

Further progressions should involve integrated movements of body segments while maintaining a solid and structurally sound torso (level, reverse, and normal woodchop cable exercises are ideal for this application).

UNILATERAL STRENGTH AND BALANCE

Growth spurts, body structural changes through puberty, and highly repetitive sports/daily movements all challenge adaptive balance and coordination in the young athlete. One area of specific concern in terms of performance and injury prevention is unilateral strength and stability. A young athlete's conditioning program should include unilateral exercises for the lower body (lunges, step-ups, single-leg hops, lateral movements) and upper body (single-arm presses and pulls) to encourage the development of enhanced stability through the hip and shoulder joints. Coordinated and balanced unilateral movements require significant core activation and joint stability while training the neuromuscular system to effectively respond to diverse movement planes and actions.

Strength training programs are key to an athlete's preparation as they can improve sports performance, prevent and/or rehabilitate injuries and enhance long-term health.

