

STRENGTH TRAINING FOR THE MARTIAL ARTS: CORE TRAINING PART II

QUICK REVIEW

In the last issue of Kickstart Magazine, I gave an overview on core training, and I explained some key concepts on the physiology, anatomy and biomechanics of training core stability. I chose to focus on core stability because this is an area that is often poorly understood. To summarize, here are the key concepts:

1. The core musculature is comprised of deep and superficial muscles and the system provides the spine with 360 degree support.
2. Some muscles provide local segmental support or simply put support to a small segment of the spine (e.g. L4-L5). These muscles often atrophy (become smaller) after a back injury.
3. Global stability is the ability to control the entire spine. All core muscles contribute to global stability.
4. In order to train global stability you must emphasize **MOTOR CONTROL** and you must **GROOVE PROPER MOTOR PATTERNS**.

THE MOTOR CONTROL CONCEPT

Motor control is a relatively simple concept to grasp. Basically it requires putting someone in a specific position where the shoulders, spine, and hips are correctly aligned and then challenging them to maintain this position while superimposing a movement.

Let's consider a very simple and commonly performed movement: Alternate Arm/Leg Raise in Four Point Kneeling (Figure 1). I am sure every reader at some point in time has done this exercise and has probably paid little attention to their body position or **MOTOR CONTROL**. In order to illustrate my point try the following:

1. Move to a four point kneeling stance (i.e. on hands and knees).
2. Make sure the hands are directly under the shoulders and the knees are directly under the hips.
3. Adjust the spine so that there is a small downwards curve or arch in the lower back, and a small upwards curve or rounding through the mid back. This is called the neutral spine position (Figure 1).
4. Gently contract the abdominal muscles ensuring the abdominal wall stays flat.
5. Without shifting the hips, changing the spine position or holding your breath slowly pick the right arm and the left leg off the ground and extend both limbs.
6. Have a training partner/coach observe you performing this exercise. They should not be able to see ANY movement other than the extension of the opposite arm and leg. The spine and the hips should not shift in any direction, and the lower back should not become more or less arched.

This sequence detailed above is an example of motor control. The spine is put in a specific position and the subject is challenged to maintain this position by having to move the limbs.

This concept can be applied to any core stability exercise (e.g. side bridge, front bridge, shoulder bridge etc...). The main point that needs to be emphasized is putting the spine in the correct position and then controlling this position.

Every athlete should develop proper motor control while performing basic exercises before progressing to advanced core exercises. This will help to ensure that the spine is not placed in any dangerous positions, and that extreme ends in the range of motion where injuries often occur are avoided.

It may take some time and supervision to become skilled at positioning the spine properly but it is certainly in the best interest of all trainers and trainees to learn this skill. Proper execution of core exercises designed to improve core stability will increase their effectiveness and will also help to reduce injuries. It will also take some time to train your eye to pick out the deficiencies but eventually the errors will become very obvious. To summarize remember the following when training core stability:

1. Pick core exercises that are the appropriate level of difficulty for your athletes.
2. Before starting the exercise find the proper position. This usually involves a neutral spine (Figure 1).
3. As the exercise is performed watch for ANY changes in position.
4. Correct the change in position.
5. If you are not already performing regular weight training consult a physician before you start a program.
6. Consult a qualified strength and conditioning specialist for a program specific to your ability and needs.
7. Contact your doctor if you feel discomfort, aggravation or pain while performing an exercise.



Figure 1: Athlete is in a neutral spine position. This is the proper start position for Alternate Arm/Leg Raise in Four Point Kneeling