Conjugate training system & Applied Functional Science for high school female basketball players.

Scott:

Having used the conjugate system in my own training and with professional male basketball athletes I've found it quite easy to "sell" the idea of max effort, dynamic & repeated effort methods to experienced athletes and lifters. Following a move to another gym I was introduced to Applied Functional Science (more on this latter) by Chris Poljacik and Ben Dearman. The AFS training really supplemented the conjugate system in terms of injury prevention and prediction; however, I was having a hard time combining the two. Thankfully I met up with Ben who had spent the previous three years combing traditional strength and conditioning (full body work outs 2-3 times a week) and AFS.

This year presented a new challenge for me, could I get high school athletes to "buy" into the conjugate system? Ben and I both decided to combine our knowledge and tackle the problem together; Harley Davidson and The Marlboro Man style. We began this basketball season working with the Hanover (NH) HS girl's varsity team (as well as some of the JV players). They began training in the beginning of September 3 days per week. I have been using the WSFSB template for a while now with my American Basketball Association team (2007 and 2008 ABA Champion Vermont Frost Heaves) and felt that this was a perfect group to try it with. A few of the girls had some training experience before this program so I basically had a bunch of athletic girls who were very eager to learn and improve. The group was made primarily of underclassmen, and it ran the gamut from tiny freshman to very athletic juniors who had barely scratched their athletic potential.

Our basic training split in the beginning was ME upper body on Monday, ME/DE lower on Wednesday, and RE upper on Friday. The athletes who had little or no training experience focused all their time with the RE method and began with body weight squats, lunges, push-ups, and basic "core" work focusing on being able to stabilize and learn to move properly. Once we felt they had the proper form and necessary initial strength we allowed them to get under the bar.

In the pre-season training we focused a lot on box jumps as our primary DE lower body movement and the rest of the workout would be 3-4 accessory exercises with reps geared toward hypertrophy. The surface we used for the box jumps was dense interlocking flooring that we would stack up. The girls really enjoyed the challenge of trying to out jump each other in this exercise. Also in the pre-season we used the 2-board and 3-board push-up a great deal for our upper body days before introducing the bench press. A typical week would look like this;

Monday:

2-Board Push-up, 3 sets 8-10 reps or max reps

Dumbbell bench variation, 3 sets of 12 reps

Pull-ups, 4 sets (assisted pull-ups with bands) or body weight rows 4 sets of 8 to 12 reps

Triceps, 3 sets of 10 reps

Ab circuit, 3 sets

Wednesday:

DE box jump or ME Squat variation

Squat movement, depending on ability – BW, DB, Barbell, 3 sets of 8-12 reps

Single leg movement—single leg squats, split squats, lunges, 3 sets of 10 reps

Glute ham raises, 3-5 sets of 5 – 15 reps, depending on ability

Friday:

Overhead press variation, 3 sets of 8-12 reps

Assisted pull-ups/chin-ups, 4 sets of max reps

Shoulders – single arm presses, lateral raises, plate raise, db cleans. 3 sets of 8-12 reps

Triceps, 3 sets of 10-12 reps

Ab circuit, 3 sets

The core lifts that we used throughout the season were box squat, bench press, deadlift, chin/pulls and push press. I consider push press to be a core lift due to the specific demand of basketball players to jump repeatedly with their hands overhead. I really liked an article written a while back which talked about using the term "Best Effort" on a given lift. I feel like this made the girls more comfortable with working with heavier, more challenging weights. Our ME days were based on the athletes "best effort" that day and we worked up to 3 and 5 rep maxes. Even when testing the girls we only went to a 3 RM.

We didn't use a whole lot of variation from the core lifts in the pre-season because we really wanted to focus on the basics, squeeze the bar, staying tight, and just being comfortable lifting heavier than their used to. We are lucky enough to have a collegiate GHR from EliteFTS at our facility and this was a staple of our program. We also used Kettle Bells a great deal and found that although they may have complained a bit in the

beginning these tended to "grow on them". We actually have one freshman girl who is about 120 lbs soaking wet who claims the GHR is her favorite exercise. Go figure! As their training progressed and the season started we began to implement variations of our core lifts. Other upper body lifts used were floor press, incline bench press and DB Snatch. Our most utilized lower body exercises were front squat, hex bar deadlift and high pull.

Once the season began the girls continued training but only twice a week. Some of them would also come in on Saturday mornings, which shows a real dedication to what they hoped to achieve. The in-season template switched to one day being ME upper/DE lower and the other ME Lower/RE Upper. They played games mainly on Tuesday or Wednesdays and Fridays so our ME Lower on Saturdays was a good way to break it up as they generally weren't that worn out from the previous night's game to put in a good effort.

Ben:

I was fortunate enough to be "turned onto" the Conjugate Training System by Scott and when we had the opportunity to work with a HS Basketball Team we both jumped at the chance to combine our training styles. We questioned whether they would both work together. AFS is concerned with mostability (the combination of mobility and stability) and strength in 3 planes of motion (sagittal, transverse and frontal). A power lifting foundation is more concerned with strength in one plane of motion (sagittal) with a carry over to the other two. After that season I am now a convert and am getting ready for my first PL meet along with five other clients that I train!

In the pre-season the girls would come in two to three times a week. They are typical HS students so they had a plethora of other responsibilities to take care off, so on any given week the workouts could have as much as twelve girls or as few as six. The first thirty minutes of every work out would be devoted to using principles of Applied Functional Science (AFS) to help the girls with any nagging injuries as well as to help "injury proof" them. During this time is when they did their "Functional Warm Up" or what I call their Movement Prep.

Functional training is a word that has been thrown around a lot as well as functional warm up. It has been used to describe exercises (standing on a bosu ball while juggling flaming dumbbells), ideas (anything that helps you in your sport) and training styles ("I use Kettle Bells and stability balls because they embody functional training"). AFS is the science of how the body moves with/against gravity and ground in three dimensions. This idea was made popular by Gary Gray and David Tiberio via their Chain Reaction workshops as well as DVD's and has since grown exponentially due to the popularity of the Gray Institute and the GIFT program.

The warm up was based around the premise that most basketball players and females in general have common problems and injuries as noted below.

- Chronically sprained ankles

    - Ankle joint physical laxity, i.e. tendons and ligaments stretched from too many sprains
    - Ankle joint neurological tightness, i.e. the bodies desire to not be injured again and thus taking steps to control motion at the ankle in an active state
    - Poor dorsiflexion and plantar flexion
    - Tight calves (gastroc and soleus)
- Weak and tight Glutes due to excessive sitting and/or ankle sprains
    - Tight glutes, specifically the external rotators
    - Weak glutes, specifically in controlling internal rotation and facilitating external rotation
    - Tight hamstrings
    - Weak/tight/injury prone lower backs
- "Sore" "achy" "painful" "hurt" "injured" knees
    - Most likely due to limited mobility at the ankle and weakness in the glutes
    - Also knee pain was found to be attributed to IT band tightness due to over active and tight TFL's, Iliopsoas and rectus femoris
- Lack of lateral extension and opposite side flexion at the hips
- General lack of mobility in all three planes of motion at all major joints in the body (ankle, knee, hip and thoracic spine)

As you can see the list that we had to deal with was fairly extensive. Because of that we used a systematic approach to treating and dealing with injuries in the warm up. We used the idea of treating the middle of the body and getting to the rest of it through the middle, i.e. get their hips as mobile and strong as possible and the benefits would filter down and up to take care of the minor issues. The hips would work as a top down driver to the knees, ankles and supporting musculature as well as a bottom up driver to the shoulders, spinal column and elbows. Major issues were handled on a one on one basis. If an athlete was found to still have issues after a few sessions then more specific exercises were prescribed, however, thankfully this was not the case. The warm up was as follows;

- General Warm Up
    - Jump Ropes
    - Mountain Climbers
    - Medicine ball, some sore of explosive triple extension drill
- Glute Activation, pick one to two
    - Lateral band walk outs
    - Partner squats (two girls, one pushed on the knees of the other while she squats)
    - Single Leg balance in various planes and directions
    - Clam shells
- Glute stretches
    - 4 count butt stretch

    - Shin cradle
- Lateral Lunges
    - Emphasizing driving the hips back
    - Emphasizing both toes pointed straight ahead
    - Emphasizing knee over ankle of bent leg and straight locked opposite leg
- Inch Worms
- Lateral Lunges w/Same Side Touches
    - Same as a regular lateral lunge, but reach down and touch the toes of the leg that is straight, while keeping weight on the opposite side.
- Anterior Lunges with Posterior, Rotational and Lateral Reaches Over Head
    - Forward knee over the lead ankle, weight on the heel
    - Back knee down
    - Back foot into dorsiflexion
    - Drive the back foot into the ground
- Kneeling Quad Stretch against the wall with hands posterior, lateral and same side rotation
- Calf Mobilization
- Toes and heels
    - With internal and external rotation
- *Note: All exercises are done bare foot*

If an athlete was excessively tight in a particular area, or needed extra stretching we would utilize a piece of equipment called the True Stretch. If you are not familiar with the True Stretch, get one…now. It is a great investment and gives you four points of stability when stretching which really helps when using facilitated multi-directional stretching. Not to mention it looks like a huge grown up jungle gym.

After the warm up completed the girls would progress into their work out. At the end of the work out, any GPP or SPP was utilized to help bring up weaknesses or deficiencies. Special attention was paid to mobilization of the pelv-trunk-ula (pelvis, trunk and scapula interaction) as well as the accompanying musculature, GHR's, Reverse Hyper Extensions (GHR and SB), sled drags (various), face pulls, pull/chin ups, REP (row, external rotation, press) and DB Matrixes were all variously utilized exercises. Special attention was also paid to the interaction between ground, foot, ankle and hip when dealing with the knee and its associated problems (patella pain, poor tracking, weakness, etc.). We utilized single leg balance reaches with various drivers, as well as various cable exercises to help control deceleration and motion in the "danger zone" (MCL/ACL tears) at the knee, i.e., flexion, internal rotation, adduction and lateral flexion, or for the AFS members, flexion in the Sagittal plane, relative external rotation and abduction/lateral flexion in the frontal and transverse plane.

Core training was also utilized to varying degrees. We both feel that to have a strong core you must lift heavy weights and work your core in an upright fashion, i.e. with

ground interaction. However, traditional grounded core (TGC) work (sit-ups, crunches, side bends, leg lifts, etc.) have all been used in the past by smarter strength coaches then us with great success…so we figured it can't hurt. The girls would always do a TGC movement and standing work in the same session, they would also never move through the same plane regardless of body position, i.e. if foot anchored sit-ups were used (Sagittal plane) then some sort of rotation or lateral flexion exercise would be utilized standing up.

The girls went on to win the NH State championship, with no injuries in the athletes we worked with through out the season. At the beginning of the training, we questioned whether the two types of training could be utilized together. Whether we would have sufficient time to implement them both in the short time we saw them on a daily basis. We are thankful to say that AFS and the Conjugate System can be utilized together to produce winning results!