



PERFORMANCE VOLLEYBALL CONDITIONING

A NEWSLETTER DEDICATED TO IMPROVING VOLLEYBALL PLAYERS

www.performancecondition.com/volleyball

INTRODUCING *MOVEMENT* TO MUSCLE

*Presented by USA Volleyball Sports Medicine and Performance Commission
Compiled by MJ Engstrom, Head Volleyball Coach, University at Albany, Member USAVSMPC*

USA Volleyball Sports Medicine and Performance Commission mission is to serve volleyball coaches and athletes through the assimilation, generation and dissemination of information in the areas of sports medicine and performance and to coordinate future research in these areas.

This issue's article is done as a combined effort of Lisa Bartels and Ken Kontor, members of the SMPC.



Mission Statement:

To educate and empower the sports coach to assess proper movement skills in their athletes. To provide the coach a corrective exercise program to improve movement skills. To monitor the effectiveness of the strength and conditioning program and effects of continuous year-round sports play. The outcome of all this is to improve athletic performance and reduce injury.

USA Volleyball
Sports Medicine and Performance Commission

Follow These 7 Simple Steps Before You Start a Strength (Muscle) Program

Step 1: Meet with Athletes-demonstrate the tests- no warm up necessary.

Step 2: Athletes perform each test and receives a Pass/Fail grade marked on their Score Card for each test as graded by coach.

Step 3: No failed tests- go to muscle training program.

Step 4: Failure of one or more tests, the athlete must do prescribed exercises suggested in the Sample Workout. The sum total of these exercises will constitute the movement program. Note: this program is not part of this article.

Step 5: Athlete does movement program for the length of time so that a "training effect" occurs, usually two to six weeks. A training effect is defined by the adaptation of the body in correcting the failed movement skill. The progress of the training should be observed by the coach.

Step 6: Retest all movement skills after the training effect occurs based on coaching observation. If the athlete passes all tests, they go to a muscle training program. If not, athlete returns to Step #4 and repeats the process.

Step 7: To measure the proper execution of the muscle program and the possible effects of continuous year-round sports play, retesting of the movements are done at the coach's discretions (every 3 months recommended). If a test is failed the muscle training program is stopped and the athlete returns to Step #4.

Why Movement to Muscle M-2-M?

There is currently a basic breakdown in the strength and conditioning process. This is caused, in part, by the current culture of continuous sports play without adequate time and resources to emphasize the athlete's proper, progressive physical development. Improper strength training techniques, improper resistance loading, causing early movement compensation have also created a breakdown in movement skills, further adding to the problem. Movement to Muscle was created to provide a simple, 10-minute screening process to detect improper movement skill. It also provides a program to eliminate these improper movement skills enhancing the



sport coaches' role in this process. It is also designed to evaluate a current strength program to ensure proper strength training practices and measure the impact of year-round sports play.

How Does Movement to Muscle M-2-M Work

M-2-M is a series of nine movement skill tests graded on a pass/fail basis. If the athlete fails any of the tests, they are placed on a movement skills corrective program which they do until they pass all the tests. Then the athlete can successfully start a strength and conditioning program. This muscle program must be done using correct exercise techniques and proper progressive overloading with planned recovery, to ensure the continuation of proper exercise techniques. M-2-M movement skills tests should be done periodically throughout the athlete's career to insure good strength training practices and to monitor the impact of year-round sports play. If the athlete fails any test at any time, they return to the M-2-M movement skills corrective program; the strength and conditioning program is discontinued until all test are passed. It is recommended that the year-round sports play load volume is reviewed and the strength and conditioning program evaluated and corrected to ensure future M-2-M test passage.

Meet the Developer of Movement to Muscle

LISA BARTELS, PT, DPT, PRC

Lisa came to Lincoln Nebraska in 1995 to accept an athletic scholarship and work towards an undergraduate degree in biology. She was a member of the University of Nebraska volleyball team from 1995-1997. Lisa was personally introduced to the field of physical therapy when she sustained significant injuries during her collegiate career. After finding success with a treatment approach termed Postural Restoration, Lisa decided to attend physical therapy school. She received her Doctorate of Physical Therapy from the University of Nebraska Medical Center in 2005. Following her training, she went to work at the Hruska Clinic for four years, and then accepted an opportunity to practice at the Rejuvenation Center in Omaha. Lisa joined Crossroads Physical Therapy in 2011.

Lisa has been certified in using Postural Restoration techniques since 2008. Lisa has been a consultant to several university sports medicine departments and authored numerous articles regarding biomechanics and preventative training strategies.

Lisa is a member of the USA Volleyball Sports Medicine and Performance Commission.



Lisa Bartels

Lisa's Movement Library - The following articles have been authored by Lisa for your review.

- *Postural Priorities-Rib Cage Influences on the Volleyball Player's Shoulder*, Click [HERE](#)
- *Postural Priorities-Rib Cage Influences on Volleyball Blocking Mechanics*, Click [HERE](#)
- *Postural Priorities-Rib Cage Influences on Volleyball Attacking Mechanics*, Click [HERE](#)
- *Core Instability in Volleyball Players*, Click [HERE](#)
- *Hip Socket (Acetabular) Ball (Femoral) Internal Rotation- AFIR*, Click [HERE](#)
- *Cautious Consideration with Hip Flexor Training*, Click [HERE](#)
- *Correct Breathing Mechanics and the Zone of Apposition (ZOA)*, Click [HERE](#)
- *Series #1 Identifying Imbalances in Athletes - Can They Achieve AF IR on the Left Hip?*, Click [HERE](#)
- *Postural Restoration Institute® Presents - The New Off-Season: Balanced Regeneration Series #2 Sagittal Plane Repositioning - Hamstring Facilitation*, Click [HERE](#)
- *Postural Restoration Institute® Presents - The New Off-Season: Balanced Regeneration Series #3 Left Ischiocondylar Adductor Facilitation*, Click [HERE](#)
- *Postural Restoration Institute® Presents - The New Off-Season: Balanced Regeneration Series #4 Gluteus Medius Facilitation*, Click [HERE](#)
- *Postural Restoration Institute® Presents the New Off-Season: Balanced Regeneration Series #5 AF ER – Right Gluteus Maximus Facilitation*, Click [HERE](#)
- *Postural Restoration Institute® Presents the New Off-Season: Balanced Regeneration: Series #6 - Integrating AF IR and AF ER into Single Leg Dynamic Training*, Click [HERE](#)
- *Postural Restoration Institute® Presents the New Off-Season: Balanced Regeneration- Series #7 –Weekly Program*, Click [HERE](#)
- *Postural Restoration Institute® Presents: the New Off-Season: Balanced Regeneration: Series #8 - A Final Synopsis*, Click [HERE](#)
- *Triangle of Chronic Shoulder and Elbow Pain Pecs, Biceps and Lats Asymmetrical Bilateral Alignment Development*, Click [HERE](#)
- *The Bermuda Triangle of Chronic Shoulder and Elbow Pain Part II - How to Co-Activate the Subscapularis and Posterior Deltoid*, Click [HERE](#)
- *Inside the Bermuda Triangle of Chronic Shoulder and Elbow Pain- Part III: Scapula Protraction and Upward Rotation Why It's Important and How to Do*, Click [HERE](#)
- *Inside the Bermuda Triangle of Chronic Shoulder and Elbow Pain- Part IV Does the Risk Out Weight the Reward of these Common Exercises? How to Maximize Reward without Risk*, Click [HERE](#)

Equipment

- Table- strong enough to support the weight of the heaviest athlete and high enough for the tallest athlete to be able to dangle their legs at the knee while sitting.
- 6" block or step
- Red TheraBand Loop (the red loop provides the minimum resistance recommended)
- Order Direct www.thera-band.com
- 2- 1 pound ankle weights

Optional- Protonics System: Order Direct: <http://www.protonics.info/>

Anatomical/Biomechanical Considerations

A coach can take any athlete through various performance testing such as the vertical jump test, pro-agility run, or 10/40 meter run to measure strength and performance, but none of these tests tell you anything about the resting position of the spine, pelvis, hips, and shoulders, or the strength differences between the left and right sides of the body, or why some athletes seem to have a reoccurring tendency towards pain and injury.

All athletes have at least some postural instability and muscular imbalance because of asymmetric sport demands. Many athletes unknowingly have significant left side versus right side differences; differences in boney position differences in muscle length/strength/function, and differences in the flexibility of various joints. Significant pain patterns can develop when imbalances become significant and the athlete continues to train and compete in this faulty position.

Rotation ability of the hips and shoulders is often assumed in competitive athletes and is not often considered at all during "testing" or when strength/conditioning programs are designed. For various reasons, athletes often lose effective proprioceptive awareness of hip and shoulder rotation. From a functional biomechanics perspective, several tests and measures can be used to identify those athletes who are more predisposed to injury. There are several corrective exercises that target key stabilizing muscles that can be integrated into a warm up/cool down or a sports conditioning training scenario.

Understanding all of the anatomical and biomechanical reasoning behind the tests and measures is probably beyond the scope of coaching responsibility, but a brief biomechanical/anatomical discussion has been included for those interested coaches. I do think it is feasible for coaches to learn how to effectively screen postural balance and functional strength on their athletes.

Testing Organization-Getting Started

Testing has been designed to be user friendly so coaches can test their athletes quickly, roughly 10 minutes. There are nine total tests; tests 1-4 are objective measurements and tests 5-9 are functional assessments. Follow the subsequent procedure for testing:

Start with your athlete sitting on the side of a table/plinth with the legs dangling. Here you will assess hip rotation (test 1 and 2). Next you will move them to a back lying position with the legs straight and assess SLR (test 3). Now have the athlete remain in a back lying position, but bend the knees with the feet resting flat on the table. Assess shoulder position (test 4). Keep the athlete in this position and test subscapularis function (test 5). Have the athlete turn over into a prone position and attempt hamstring curls with the red Thera loop (test 6). Move the athlete to a standing position with appropriate block/step heights and perform standing hip shift (test 7) followed by standing push into single leg balance (test 8). The last test will be performed side lying, either on the plinth or floor, so the athletes top leg can be positioned on the wall. Assess posterior hip capsule flexibility (test 9). Following is a description/explanation of each test.

Objective Tests

Objective Tests #1- Seated Hip Internal Rotation - Click [HERE](#) to see How-to

Passed Test

- An optimal number of degrees is around 40

Failed Test

- Greater than 45 degrees (high Internal Rotation levels coincide with increased ACL risk). Pain in groin is produced with the test (this is most likely hip impingement).
- Less than 30 degrees (this is significant restriction in the posterior hip capsule and/or significant overuse of the deep hip rotators).
- This is most likely hip impingement, however chronic hip impingement frequently precedes hip labrum injury and/or sports hernia injury.

In-dept Information

Measuring passive rotation of the hip in the internal rotation direction gives you an idea of where the femoral head is relative to hip socket. In many athletes, the femoral head has begun to translate forward secondary to quad/hip flexor dominance and tightening of the posterior hip capsule. It also tells you something about the tone/strength of the gluteus medius, a key muscle needed in keeping the hip, knee, and lower leg healthy.

Be Sure to watch for more on Movement to Muscle including all the nine tests.

Contact Lisa at: lisa_bartels@hotmail.com

Score Card



Movement TO MUSCLE

Mark Score Card - Pass or Fail

Name of Athlete:

Date:

Objective Test #1 - Seated Hip Internal Rotation Pass Fail

Objective Tests #2 - Seated Hip External Rotation Pass Fail

Objective Tests #3 - Straight Leg Raise (SLR) Pass Fail

Objective Tests #4 - Shoulder Position Pass Fail

Functional Tests #5 - Subscapularis Pass Fail

Functional Tests #6 - Hamstrings Pass Fail

Functional Tests #7 - Hip adductor and gluteus medius synergy
Pass Fail

Functional Tests #8 - Gluteus maximus and quadriceps synergy
Pass Fail

Functional Tests #9 - Posterior hip capsule perception & flexibility
Pass Fail