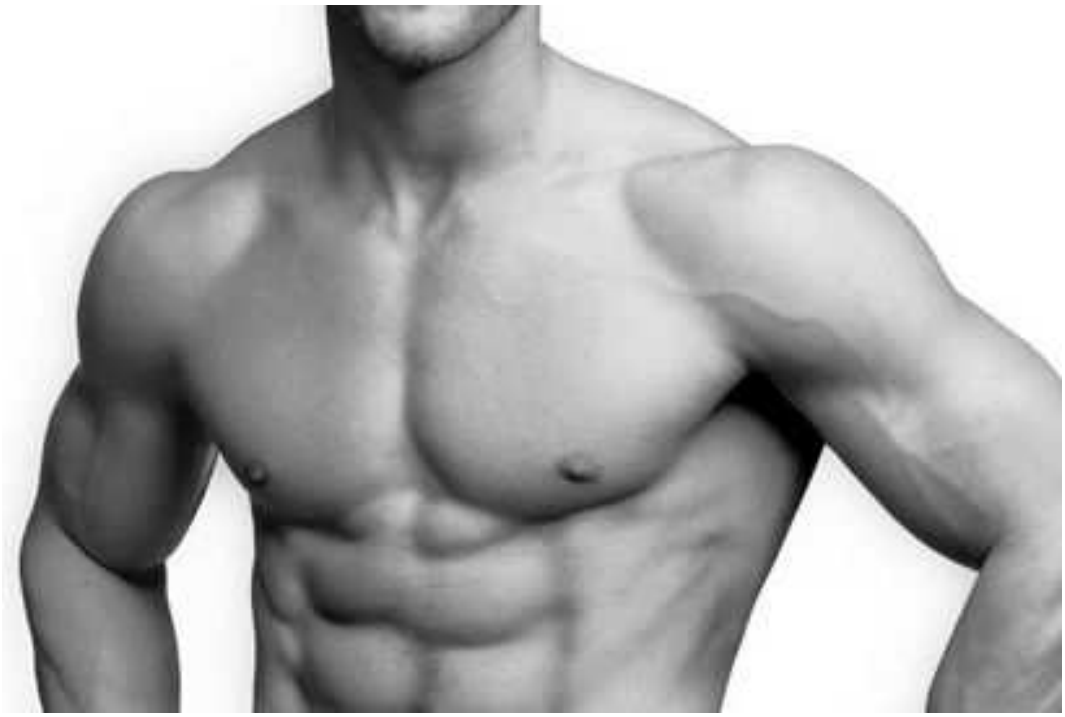
Developing a Reactive 6-Pack with RBT

By Dave Schmitz PT, CSCS, PES



For more information on resistance band training or other products please contact:

Dave Schmitz at: dave@resistancebandtraining.com

Dave Schmitz

Websites: www.resistancebandtraining.com

Disclaimer

The information in this manual is offered for educational purposes only. The reader should be cautioned that there is an inherent risk assumed by the participant with any form of physical activity. With this in mind, those participating in strength and conditioning programs should check with their physician prior to initiating such activities. Anyone participating in these activities should understand that such training and stretching initiatives may be dangerous if performed incorrectly. The author assumes no liability for injury; this is purely an educational manual to guide those already proficient with the demands of such programming.

Getting to the "Core" With RBT

Let's begin by stating a few facts of about the abdominal muscles.

- The Core muscles are no different than any other muscles of the body.
- They are reactors not contractors. They respond to changes driven by momentum, ground reaction and gravity.
- They must be loaded before they can explode.
- They must be lengthened to some degree before a concentric force will be produced.
- They must be "proprioceptively turned on" first.
- They must have the ability to lengthen which means arms and legs must be involved
- They cannot be pain when loading
- Muscle control occurs by getting stationary (isometric) first, than mobile control before developing total movement integrated control….
  Control – Rhythm - Power

Defining of the Core as it relates to movement and function

The lower abdominals, pelvic, and hip (LPH) muscles make up the Core. Often the mid back and neck muscles are also consider part of the Core. Based on its function, core muscles can also be consider postural muscles or postural stabilizers. However our focus for this article will be on the LPH region primarily but realize the entire postural stabilizing system will be involved.

Function of the Core

Dynamically, the Core, maintains the body's center of gravity (COG) over it's base of support (BOS). Simply stated, it keeps you balanced over your feet by controlling how far the body's COG moves forward, backward, sideways, or rotationally (multi-planer). Individuals that have a weak core often are unable to let their arms and legs move aggressively outside their COG because the core muscles are unable to handle the momentum or being lengthened that far outside their COG unless the BOS is increased.

Swinging your arms and legs like in running or walking is a perfect example of this. Since extremity movement is what drives our body's ability to move fast, either linear or laterally, it is safe to say the core is truly "the Engine" that makes all integrated movement like running occur.

Anatomy of the Core

Like all muscles the core muscles follow a multi-plane alignment. This is critical information when developing a core strength and conditioning program. Also it should be noted that either directly or indirectly (muscle attaching to muscles) all muscles of the body attach to the LPH region. Therefore anatomically the key to developing and training the core muscles are to incorporate multi-plane, total body movements that are driven from the extremities.

Understanding the “Trunk"

Part I – *“Eliminating the Abdominal Myths”*

What are the most common misconceptions about training the abdominals?

1. Abdominal exercises will magically melt away the fat in this area.
2. Lying down is the best way to train your abdominals.
3. Flexing your spine as with crunches or sit-ups are the key exercises to developing the abdominal region.
4. Trunk muscles are different than other muscles of the body.

The abdominals are the least understood area of the body and yet functionally it is the heart and soul of our ability to move effectively and create power when needed.

Let’s begin to understanding how to best train this region by addressing the above myths first.

Abdominal exercises will magically melt away the fat in this area

Losing weight does not occur in isolation. As we lose weight it will occur first where we store it the most. Since the abdominal area is our most common storage area, typically the waist line is the first to notice the loss. However doing sit-ups till the cows come home will not burn the necessary calories needed to decrease your mid section. Doing a consistent functionally based interval strengthening program and cardio program will do more to decrease your waist line than all the sit-ups in the world.

Lying down is the best way to train your abdominals

Fact 1: For most of us walking, standing, or running is where we spend most of our day.

Fact 2: Standing, walking, running are the positions where most injuries happen.

Fact 3: The abdominal region is a key reason why 90% of the population will suffer a low back injury sometime in their life.

Fact 4: Sit-ups or crunches are the most common abdominal exercise performed in fitness centers and weight rooms.

These facts say to me we are not training the abdominal region correctly. Our body is designed to function in an upright, standing position. Therefore, all our muscles including our abdominals function best in an upright position.

Training a muscle the way it is designed to function, makes that muscle develop and get stronger, leaner and activate faster. Lying down is actually the best way for our body to recover unless you sleep standing up.

Flexing your spine (i.e. crunches or sit-ups) are the key exercises to developing your abdominal region

Stand up and bend over to touch the floor. Did your abdominals feel like they contracted? Probably not very much… Thus the next question is Why not????

Gravity assisted your upper trunk to the floor. Therefore your abdominal muscles did not have to work. As a result, spending time doing sit-ups or crunches is time spent on something that functionally is given to us for free.

Also, research informs us that spinal flexion movements, along with rotation, are the most common motions that lead to disc herniations. So instead of saying let's do 100 crunches, say let's get 100 reps closer to a ruptured disc.

Next time you meet a person who suffers from low back pain ask them if they have pain with sit-ups or crunches. 95% of them will answer yes.

Trunk muscles are different than other muscles of the body

Trunk muscles are just as dumb as all the other muscles of the body. They do not consciously respond. They react to functionally based drivers which primarily include forces driven from gravity, ground reaction, and momentum.

Training your trunk using artificial machine-based environments or tools will not make it look better or react more effectively.

Also, anatomically 3 out of the 4 trunk muscles follow a diagonal or transverse plane. Yet most traditional trunk exercises are sagittal plane movements or use weighted objects (db-medballs or kettlebells) that only create a sagittal plane force vector.

To optimally train the trunk to react, implementing tools that allow for diagonal movement and create force in horizontal vectors is critical.

Understanding the "Trunk"

Part II: *Developing trunk Integration not Isolation*

The abdominal muscles are very dumb and function just like all your other muscles….

…They React not just Contract

Muscles like the abdominals "React (or become loaded) as a result of gravity, momentum and ground reaction. They don't just contract by themselves or by conscious recruitment. Instead they response to movements of your arms, legs, and hips (especially). This movement loads or lengthens the muscle which in turn neuromuscularly activates them.

Muscles that are not turned on first or loaded do not respond effectively

Let's take a look at jumping as an example. In order to jump vertically, an individual must load their lower torso by squatting first. The higher the "intended" jump, the greater the load needed. If you don't squat, you can't jump very high.

The sequencing of muscle reaction during that loading phase along with optimal strength is what creates an explosive jump reaction. If sequencing is off, your vertical jump will be less than optimal regardless your strength.

You can use the same analogy for any functional movement. As a result, if you really want to develop your abdominal muscles, you'd better be training them to load quickly and efficiently and not just consciously contracting them with a Sit-up or Crunch.

How do I load the abs???

To best understand how to load or lengthen the abdominal muscles, we must first understand the direction that the abdominal muscles run. 3 out of the 4 key abdominal muscles run either in a horizontal or diagonal direction and have a generally "top to bottom" orientation. Therefore to optimally load the trunk muscles we will need to side-bend, rotate, and extend the trunk.

Ready… Try this!!

Stand up, stagger your feet about 2-3 feet apart with the right leg forward. Reach up like you are trying to touch the ceiling. You should feel your abdominal muscles pulling in. Now reach slightly back taking the weight off your right foot. You should feel your trunk stretch and tighten. You just loaded your trunk.

If you attempted this you may have felt your low back arch or begin to tighten up. You may also have felt the front part of your right hip stretch, your rib cage muscles stretch or your shoulders pinch. This will occur as a result of compensations that include:

- ✓ The lower abdominals not being strong enough to slow down your upper torso momentum, thus the low back is allowed to over-extend or arch excessively.

- ✓ If your hip flexors or quadriceps muscle (which attach into your low back) are restricted due to poor dynamic flexibility, they will not allow the lower abdominals to lengthen from the bottom up. If you have tight anterior hip structures, your abdominals will need to fight against that resistance. If the lower abdominals are weak, they give up and subsequently allow the low back to hyperextend.

- ✓ Lastly, if the latissimus dorsi (which is also attached into your low back) is tight, the low back will again compensate to allow your arms to reach behind your head as you had intended to do.

Knowing this, the role of the abdominal muscles must be to prevent excessive low back extension or "arching". If that is what you thought, you would be exactly correct.

That is a significant contradiction if you look at what a sit-up does. Actually the role of the lower abdominal muscles (specifically the internal obliques, external obliques, and transverse abdominus also known as the "Inner" unit) is to control or decelerate rotation, extension and side bending of the trunk.

The lower abdominals are "Not" designed to create motion, which is what a sit-up or crunch does. They are designed to stabilize motion especially in the lumbar spine.

This statement will provide us the key to understanding and designing a reactive training program for the using an RBT approach.

Here are 3 other key elements of “Developing a Reactive Trunk with RBT”

1. You should exercise your abdominals in weight-bearing or partial WB all of the time.
2. Your arms and legs should be moving and/or assisting with stabilizing .
3. Think “deceleration or loading first”.
4. Train in multi-planes
5. No low back pain

Understanding the Trunk

Part III: *Getting your Abs to React not Just Contract using Resistance Band Training*

Muscles are really very dumb. They don't think, they simply react to momentum, gravity or ground reaction forces that are transferred through your arms and legs. The faster and more efficient muscles react to these drivers, the leaner, stronger and more developed they become.

Many trainers, coaches, and fitness-minded individuals understand the role of the core as it relates to static or isometric stabilization. Often the concept of training the trunk by applying the use of momentum or ground reaction forces that are being transferred through the upper or lower extremities is typically not well understood or well implemented.

Training the trunk to only be an isometric stabilizer is not going to create a reactive trunk and subsequently will not optimally prepare the body to handle daily or athletic events efficiently.

Take advantage of the Feed Forward System

Your lower abdominals, especially your deep transverse abdominus (TA), are neurologically set up to actually fire or react a split second before actual movement occurs. This is known as a Feed Forward system and for the most part is only found in the neuromuscular make-up of the TA.

That said, movement is a must to getting the abdominals to react effectively, and obviously speed will become a key element in training as well.

Get Your Trunk Reacting

Getting your trunk to react comes down to following these 4 principles of functional movement.

1. All muscles must be loaded and lengthened to some degree before they can react and produce force.

2. Muscles are best turned on in weight-bearing since this is the posture and position our body was designed to function in.

3. Muscle must be turned on by utilizing drivers like momentum (or speed), ground reaction forces (or weight shifting) and gravity. This will occur by creating extremity motion and adding elastic resistance.

4. You must train muscles to react to force vectors occurring in all planes of motion.

Why Bands???

The elastic nature of RBT accelerates momentum, speeds up gravity, and increases ground "reaction time" response. This in turn trains muscles to react faster with improved rhythm or sequencing.

RBT also allows you to challenge muscles in all planes of movement and force vectors. They are not gravity dependant like weights, med balls or kettlebells.

Lastly, bands increase their resistance as you work against them. This in turn creates greater effort at the end of movements which forces muscles to work harder to actively lengthen.

Secondly, the accelerated rebound you incur as you return out of the contracted movement will cause your body to stabilize dynamically on every rep.

This rebound stabilization response is actually the trunk being loaded, which is exactly what you want your trunk to neuromuscularly develop.

How do I implement RBT into my trunk training program??

First remember, that if you are always training in standing, every exercise is a trunk reacting exercise.

That said, the best place to begin a react trunk RBT program is with plank isometric training using bands to provide proprioceptive feedback at the low back and mid back.

This feedback can occur as either an assisted or resisted training stimulus. Initially many trunk weak individuals need assistance to develop an appreciation to where their trunk must be positioned to avoid compensation.

Assisted Isometric Stabilization

Once this appreciation is developed through assisted RBT Trunk training, it is time to move on to developing good body weight control.

Body Weight Isometric Training

Once individuals can demonstrate effective active control by holding each position for 60 seconds, applying a resistance band for additional resistance and proprioceptive feedback is a great way to increase trunk isometric reaction.

RBT Trunk Isometric Training

Once able to demonstrate good floor stabilization, taking this isometric strength to a standing posture is the next step. This will now bring in ground reaction forces from the "bottom up" which will be a key driver of Reactive Trunk RBT.

It is very important to key in on posture and positioning as it relates to shoulder, pelvis, low back and base of support.

<u>Standing Isometric Trunk RBT (Band only)</u>

Dowel-Band Isometric Training

Incorporating a similar isometric training in standing using a band connected to a dowel allows you to change the lever arm while creating an easier way to hang on to the band.

Dowel-Band training also provides great visual feedback to your clients. Essentially the dowel reflects their pelvic alignment and stabilization factor. If the dowel is moving or not maintaining a good level position, the trunk is probably doing the same.

Developing a Reactive Trunk with RBT Kick-outs

The role of the trunk muscles (especially the Inner Unit) is to maintain your Center of Gravity (COG) over your Base of Support (BOS). Therefore if we change your base of support by going from 2 legs to 1 leg, your trunk muscles immediately activate with greater force or you lose your balance.

By increasing the lever arm or the distance from the Point of Resistance (POR) to your COG (usually near the navel), the trunk once again is asked to react more aggressively.

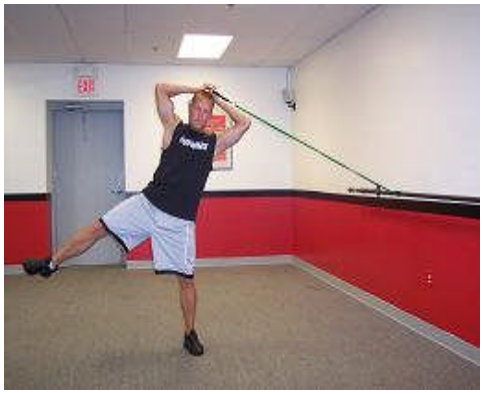
The Kick-out Drill or dynamic single leg balance drill is a great way to develop dynamic trunk control in a safe, slow and effective manner. By incorporating a mirror it also becomes a great self teaching technique.

The goal of the Kick-out Drills is to maintain your body in line with the moving leg. This will automatically cause the trunk to decelerate motion at the lumbar spine. Forward bending of the upper torso as well as side bending or hyperextension of the lumbar spine during the kick out motion is considered compensation and a sign of weak inner trunk.

Correcting these compensations by decreasing the amplitude of the kick-out and increasing the focus on the lumbar spine will usually eliminate these compensations quickly. The key to maintaining a solid posture is to emphasize a long reach while gradually increasing your speed and amplitude of movement.

Speed + length + an increased lever arm all create a greater demand on the inner trunk stabilizers.

Short arm SL Kick-outs



Extended Lever Arm Kick-out

By extending the arms out into full extension you now increase the lever arm and make the trunk become more reactive. This will create a greater force at your center of gravity, causing the trunk to have to stabilize more aggressively.

Dowel – Band Stabilization

Adding a dowel to this simple exercise immediately increases the lever arm making the trunk once again increase its recruitment. Make sure you securely attach the band onto the end of the dowel to avoid the band slipping off.

Getting Total Trunk Integrated Reaction Using RBT

With isometric control and mobility control using kick-outs now established, it is time to develop total trunk integrated reaction.

For many years it was felt that if the trunk was isometrically strong, functionally your trunk was in good shape. However, if you bench press 400 does that make you a good offensive lineman? Obviously the answer is no.

You must be able to harness your strength and integrate it into functional movement in order for it to become "usable strength". The same is true for the trunk. Isometric strength is important but you must be able to harness that isometric strength and integrate it into functional movements.

This is easily accomplished using RBT Overhead Step Matrix training.

The key to these drills is rhythm and timing. When your foot contacts the ground, the trunk must reflexively engage and protect the lumbar spine. The overhead position will pre-load the trunk from the top down while the stepping action drives the trunk to react.

If this is done effectively you will see:

- No loss of balance during the stepping action
- No secondary steps upon returning to the starting position
- No Low back collapsing or tightness experienced
- A tall "Pillar" like posture

RBT Overhead Step Matrix

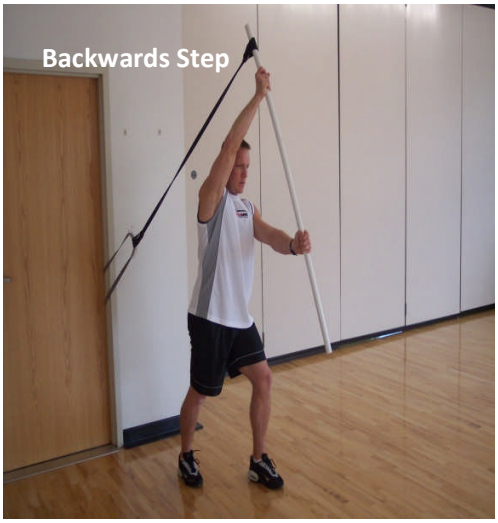
Again we will implement the same overhead position used on kick-outs. However now instead of kicking out, you will perform a backwards step, sideways step, or a drop step while maintaining your hands directly over your head in a tall posture. As your foot comes in contact with the ground, ground reaction forces will cause the trunk to react especially if the arms are fully extended overhead with the band attached.

As you perfect this movement, you may begin to let the arms release backwards which now creates more momentum and trunk reaction from the top down.

Finally by releasing the trail foot off the ground it will create a smaller BOS which in turn will create a greater need for trunk stabilization.

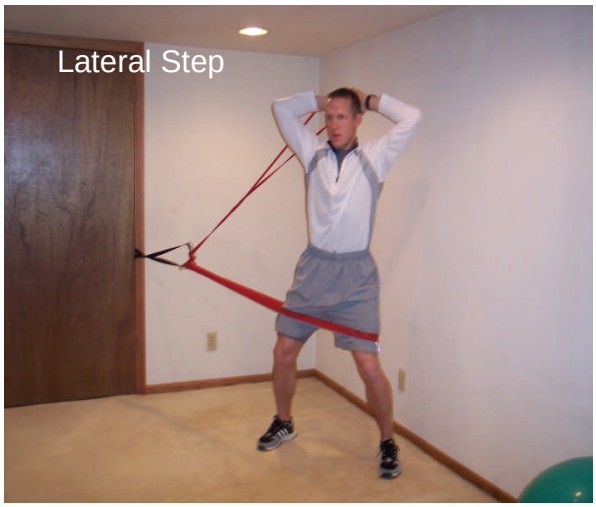
Band Only Step Matrix

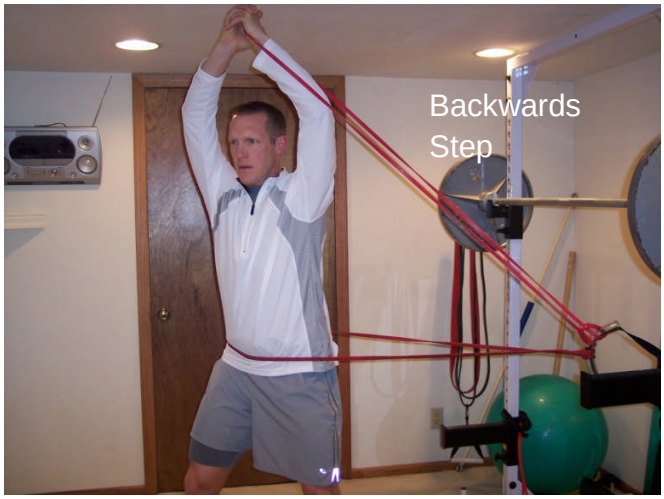
Step Matrix with Dowel- Band



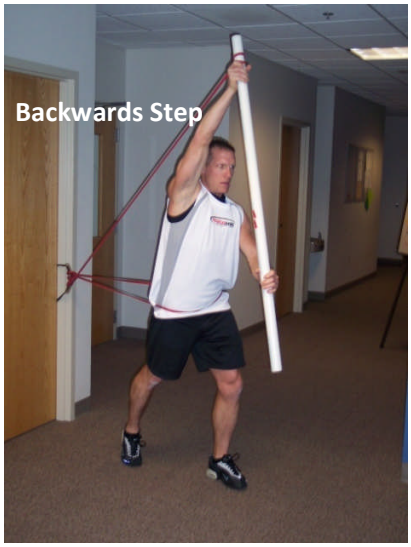
Multi-Vector Reactive Trunk RBT

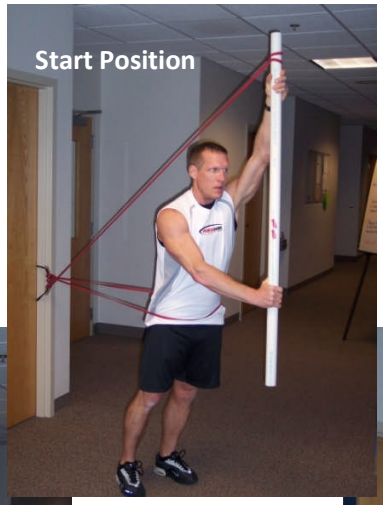
The final progression is to now create force at the hip while continuing to create an upper torso reaction driver with the step action. This is referred to as combination band training and is a great way to activate the entire core.





Dowel-Band Step Matrix





This is a highly advanced training sequence that will challenge the trunk stabilizers and hip stabilizers to become integrated in order to protect you lumbar spine and maintain optimal control of your COG.

There should be no low back stiffness when performing this higher level trunk reaction drill.

Final Recommendations on the Trunk Reaction RBT progression

1. Speed kills

Control, Rhythm, then Speed…. When you are first learning to load the abdominals make sure you progress carefully and do not accept low back pain as a part of the exercise. This is not a low back exercise.

If your abdominals are well integrated and are not being over challenged by tight anterior hip structures, your low back will not feel a thing except the joy of not being asked to compensate.

2. Load with a band you can handle

Even though your extremities can handle the load this does not mean your trunk can.

Pay attention to foot work, balance, low back control and ground contact force. Keep your foot contact soft and your body will thank you.

3. Isometric strength can never be too strong

Developing weight-bearing integrated trunk stability is the goal. But increasing your isometric trunk strength will only help your ground reaction stability. Continually challenge your isometric strength. Do not go strictly with weight-bearing stabilization once you have reached the initial goals in that phase.

4. Load in all planes

It is important to make sure you create a multi-plane reactive trunk. Avoid over training in the sagittal plane. Challenge frontal and rotational planes equally as often. Your trunk is three dimensional and must be trained accordingly.

Bonus Article

Get a Reactive Six Pack with Reciprocal Training

Have you ever seen a FAT Sprinter???

Sprinting is one of the most effective ways to train and develop a lean well developed trunk. Sprinting not only creates tremendous trunk rotational power and deceleration control, it also is a great anaerobic training approach that is awesome for fat burning.

The problem is, not all people can run without structurally breaking down and developing knee, hip, ankle or low back pain. As a result, many individuals simply cannot safely use running as a training approach.

CAN'T RUN … NO PROBLEM!!

For several years now I have been implementing a resistance band training approach I refer to as Reciprocal RBT. Reciprocal RBT is characterized by the upper or lower extremities moving simultaneously in opposite directions, similar to what occurs in running or fast walking.

We know that the primary role of the trunk muscles is to control lumbar (low back) spine segmental movement while creating a communication link between the upper and lower extremities. When arms or legs are explosively moving in opposite directions, the trunk becomes highly reactive and muscle recruitment is elevated.

Greater muscle recruitment means better muscle development.

As a result, Reciprocal RBT has provided me, as well as many of my clients, a strength training option that can provide the trunk response felt with sprinting without having to sustain the ground reaction, joint traumatizing impact.

Why Bands???

Bands are not gravity dependant and therefore allow for vertical, rotational and most importantly, horizontal force plane production and reduction. Weights simply cannot create horizontal ground based force production as a result of gravity.

Bands also speed up momentum as a result of their elastic nature and create greater force at the end of range vs. mid range. This accelerated momentum creates a more "functional reactive" trunk response similar to that in sprinting.

Lastly, bands are very portable and can easily be set-up anywhere. This makes Reciprocal RBT an easy training option.

Exercise Set-up

The goal is speed, therefore resistance will be low to allow for maximum acceleration and more importantly deceleration. Typically small or medium size bands (FlexBand Mini or Monster Mini bands) work well and provide adequate resistance with Reciprocal training.

Set-up #1

Parallel Stance will increase trunk reaction by potentially allowing the low back to migrate. The parallel stance keeps BOS symmetrical which does not lock down the lumbar spine. As a result the trunk has to be much more involved.

This is an effective way to initially start Reciprocal RBT and allow the upper torso push-pull timing to be mastered.

Set-up #2

Staggered Stance will now create greater hip and ground reaction influence. This will also simulate the running position more effectively.

With this BOS, the lumbar spine, especially L5, is locked as a result of the anterior – posterior alignment of the lower extremity.

This alignment allows the lower torso to now become a greater influence on the overall isometric stabilization.

Make sure to train with each foot forward.

Set-up #3

Lateral Stance activates the powerful transverse plane. Considering 75% of all trunk muscle fiber follow a diagonal plane, this becomes one of the best ways to develop the trunk musculature.

This motion will not only assist with creating incredible trunk reaction and power with running, it will also influence your power for throwing.

Reps & Sets

Reps and sets can vary based on training goal. My typical goal is to create power endurance. Therefore I will typically work for time vs. actual reps.

The following are recommendations:

20 sec on 10 sec off x 10 sets

40 sec on 10 sec off x 6 sets

60 sec on 15 sec off x 4 sets

Multiple on times with 15 sec recovery x 6 sets

Keep in mind if trunk development is the goal, you may go for longer set times to get maximum trunk fatigue.

Summary

If you can't sprint or if you are looking for a great way to train your trunk for sprinting, Reciprocal RBT may be a great option to not only develop a leaner more well developed trunk but also a well Integrated Trunk.

Reciprocal RBT is just one of the several "reactive" training techniques covered in the **Resistancebandsunleashed DVD Series**. Life is not about just getting strong and powerful. Your muscles must be taught to react if you want to avoid injury and develop the body you are looking for.

To learn more about how to train your body to function and move better using resistance bands, checkout the "Ultimate" Resistance Band Training resource at **Resistancebandsunleashed DVD Series**.

Who is Dave Schmitz??

Dave is a Licensed Physical Therapist, CSCS, LAT and PES who since 1997 has continued to perfect the art of Reactive Resistance Band Training (RBT) while training all levels from professional athletes to fitness minded individuals and youth.

He has written several articles, E-books and created 4 DVDs all exclusively devoted to resistance band training.

He lectures nationally to physical therapist, fitness professionals and coaches on the role of RBT in enhancing human movement and performance.

You can learn more about Dave and his work at www.resistancebandtraining.com

Other RBT Resources

ResistancebandsUnleashed DVD series

This 3 DVD set takes you through all the RBT strengthening drills or circuits I implement with my clients and athletes. This unmatched DVD series will not only help you develop your own strength and power, it will provide your clients with incredible new options for training.

To learn more about this outstanding product go to RBT Unleashed

Basketball Band Speed and Conditioning

Take your court speed and vertical to entirely new levels. This DVD & CD ROM combo provides you everything you need to increase basketball speed and vertical elevation including….

- ✓ Flexibility Training
- ✓ First Step Speed Drills
- ✓ Speed Strengthening
- ✓ Vertical and Horizontal Jumping Drill
- ✓ 8 Week Workout Program
- ✓ 8 Week Vertical Jump Program

To learn more about this outstanding Basketball Training Package go to RBT Basketball Speed and Conditioning

Total Flexibility With Resistance Bands

Total Flexibility with Resistance Bands takes you step by step through the most effective dynamic stretching program available. If you are in need of enhancing your hip, shoulder or ankle flexibility to eliminate knee, low back, shoulder or hip pain, Total Flexibility could be your answer.

You can find more information on this at
Get Flexible Now

Accelerating to the Ball

Develop an incredibly fast and explosive first step and then turn that first step into acceleration speed that will blow away your opponent.

Win the first 5 yards and you will probably win the game

Learn more at Game Speed