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# Core Training: Partner-Based Medicine Ball Training

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This article will define the muscles of the core, discuss exercises to train the core, and provide some of the benefits associated with training the core. No matter the population, adult, youth, or athlete, the core is a vital part to every training program.

## Core Defined

There are actually several regions of the body and muscles that encompass the core musculature (2). Core muscles and movements include the abdominals, back, and hips (Table 1). It is vital to train all of these regions of the body to help maintain posture, improve muscular balance and coordination, improve power, and provide fluid movements to the upper and lower body (several muscles attach at the pelvis and spine). This can be accomplished by training the core in all three planes of motion (Table 1) (5).

## Core Exercises

There are several modalities and exercises associated with improving core performance. Body weight can be used to perform sit-ups and crunches. Stability balls may be used to create an unstable environment challenging balance and coordination. Kettlebells and dumbbells may be used over the head to challenge core stability (4). Finally, medicine balls may be used to help develop strength, power, and incorporate movements in all three planes of motion (1).

## Benefits of Core Training

As mentioned earlier, there are several benefits that can be achieved by training the core including increased power production, improved stability, improved balance, and a reduced risk of injury (3). Power production is essential for many rotational sports including golf, baseball, and tennis. A strong core allows for more power to be delivered through the entire kinetic chain (3). Many of these movements can be performed using a medicine ball in a closed chain fashion through the transverse plane (1). Stronger upper and lower body muscles that attach in the core region of the pelvis and spine allow the individual to be better coordinated, more stable, and more efficient when completing movements (3,5). Core training can

benefit one's balance and may improve proprioception and body awareness allowing them to maintain a specific position in space (5). When the core, upper body, and lower body are strong, stable, and powerful this creates a scenario that may provide the individual with a decreased chance of getting injured while performing an activity.

## Partner-Based Medicine Ball Training

Adding medicine ball movements to a strength and conditioning program can be advantageous for several reasons. As previously stated, there are the general benefits achieved by training the core. Specifically, adding a medicine ball into a training program can enhance sport-specific body movements in all three planes of motion, increase angular velocity and intensity, and allow the individual to perform the exercises in multiple body positions (e.g., standing, lying, kneeling) (1). Intensity and volume can easily be modified by increasing or decreasing the weight of the ball depending on the goal for the specific movement, exercise, or program type. For example, if trying to increase speed and endurance a lighter medicine ball would be used. Conversely, if power and strength are the goal for the individual a heavier medicine ball would be used. Selecting the correct weight of the ball should depend on the fitness level of the individual and their specific goals for the current training program. Partner training also creates a situation where both individuals are engaged in the workout and continuously moving at all times. This is great for small group training and programs focused on youth.

## Exercises

The following are just a few of the medicine ball exercises that can be integrated into a training program. The examples will incorporate multiple planes of motion and movements performed standing and lying down. Examples will include individual exercises and how the exercises can be arranged to perform a core circuit.

## Trainer or Partner Setup (Catch and Return) (Figure 1)

First of all, the trainer or partner must be able to catch and receive the ball effectively so that the medicine ball can be returned to the trainee in a timely and efficient manner. The partner is very critical to the movement pattern so that there is a smooth transition between repetitions to maximize the exercise. The partner will stand with knees slightly bent and arms extended in front of the body. When the ball is received, slight eccentric recoil in the elbows will occur and the ball should be returned to the trainee quickly and accurately. The partner and trainee should work as a team and focus on throwing the ball to each other so there is a smooth exchange and not at each other, which could create an interruption while performing the set. The partner will have the same setup for all of the following exercises.

## Medicine Ball Toss (Figures 2, 3, and 4)

The trainee will start in a seated position with the legs out in front and slightly bent. Hands should be in front of the face ready to receive the ball. The partner will perform a chest pass aiming slightly above the head. The trainee will catch the ball, go back and tap the ball to the ground creating an eccentric load on the core. Then, quickly and explosively return the ball back to the partner following through with the arms. The concentric toss back is done with one movement with the hands over the head; it is not a sit-up and chest pass.

## Reverse Medicine Ball Toss (Figure 5)

The trainee will start in a prone position with the legs out in front, slightly bent and facing away from the partner. Simultaneously, the partner will chest pass the ball towards the middle of the body and the trainee will catch the ball while sitting up, tap the ball to the ground and return the ball back to the partner finishing in the prone position.

## Medicine Ball Toss/Knee Punch Combo (Figures 6, 7, 8, and 9)

The trainee will start in a seated position with the legs out in front and slightly bent. Hands should be in front of the face ready to receive the ball. The partner will perform a chest pass aiming slightly above the head. The trainee will catch the ball, go back and tap the ball to the ground creating an eccentric load on the core. Next, the trainee will explosively punch the knee to the ball, eccentrically load the core by tapping the ball to the floor and explosively punch the other knee to the ball. Then, the trainee will tap the ground behind them, perform a sit-up and tap the ground between the legs. Finally, the trainee will eccentrically load the core one more time by tapping the ground behind them and return the ball back to the partner in one explosive movement.

## Standing Rotations (Figures 10 and 11)

The trainee and the partner will both be in standing positions; the trainee will have their back to the partner holding the ball in front of them with arms extended. The trainee will rotate the trunk through the transverse plane allowing the hips to move freely with arms extended; follow the ball with the eyes and explosively toss the ball to the partner. The partner will return the ball to the other side and repeat the movement.

## Standing Axe Chops (Figures 12, 13, 14, and 15)

The trainee will stand with arms extended in front of the body and perform a semi-circle to the side of the body raising the ball above and behind the head eccentrically loading the core. The trainee will then follow through by slamming the ball to the floor under control.

## Seated Shoulder Thrusts (Figure 16)

The partner will stand at a 45° angle facing the trainee. The trainee will be in a seated position with legs out in front and slightly bent. The partner will toss the ball to the trainee across their body. When the trainee receives the ball, they will rotate following the ball with their eyes and explosively thrust the ball back to the partner. It is important for the trainee to keep their elbows up and thumbs down during the movement. This exercise is intended to be a shoulder thrust and not a rotation.

## Seated Rotation (Figure 17)

The trainee will be in a seated position with legs out in front and slightly bent and the partner will stand perpendicular to the trainee. The partner will toss the ball to the trainee across their body. When the trainee receives the ball, they will rotate with arms extended following the ball with their eyes and explosively toss the ball back to the partner.

## Seated Isometric Chest Pass (Figure 18)

The partner will stand directly above the trainee holding their legs together. The trainee will lean back at 45° angle. The trainer will toss the ball to the chest and the trainee will then explosively perform a chest pass back to the partner.

## Seated Overhead Toss (Figure 19)

The partner will stand directly above the trainee holding their legs together. The trainee will lean back at 45° angle. The trainer will toss the ball behind the head and the trainee will catch and return the ball back to the trainer performing a tricep extension movement.

## Program Design, Volume, and Circuit Design

A few questions must be answered before integrating the medicine ball into a training program. What is the current fitness level of the individual? What are the training goals? What size of medicine ball should be used? If the goal of the individual is to increase power then performing 3–5 repetitions with a heavier medicine ball relative to their fitness level would be the correct volume. If they want to improve muscular endurance then ball performing 12–15 repetitions with a lighter medicine ball would be the preferred volume (Table 2). A medicine ball circuit can be created by combining five of the previous exercises; this is a fun and challenging way to work the core. The medicine ball toss, shoulder thrust, seated rotation, isometric chest pass, and isometric overhead press are the five exercises in the circuit for the purpose of this article. The basic circuit has a total of 13 exercises and totals 39 repetitions (Table 3). The intensity and volume of the core circuit can be increased by modifying the weight of the ball and the repetitions completed (Table 4). ■



Figure 1. Catch and Return



Figure 2. Medicine Ball Toss



Figure 3. Medicine Ball Toss



Figure 4. Medicine Ball Toss

## References

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Figure 5. Reverse Medicine Ball Toss



Figure 6. Medicine Ball Toss / Knee Punch Combo



Figure 7. Medicine Ball Toss / Knee Punch Combo



Figure 8. Medicine Ball Toss / Knee Punch Combo



Figure 9. Medicine Ball Toss / Knee Punch Combo



Figure 10. Standing Rotations



Figure 11. Standing Rotations



Figure 12. Standing Axe Chops



Figure 13. Sanding Axe Chops



Figure 14. Standing Axe Chops



Figure 15. Standing Axe Chops



Figure 16. Seated Shoulder Thrusts



Figure 17. Seated Rotation



Figure 18. Seated Isometric Chest Press



Figure 19. Seated Overhead Toss

Table 1. Planes of Motion

Plane	Description
Sagittal	Decelerates lumbar extension during anterior motion of the pelvis when the foot hits the ground
Frontal	Decelerates the drop of the pelvis when the foot hits the ground then accelerates the trunk helping the leg swing through
Transverse	Decelerates the hips and shoulders
Body Regions	
Region	Muscle Groups
Abdominals	Internal and external obliques, transverse abdominus, rectus abdominus
Back	Paraspinals, trapezius, psoas major, multifidus, erector spinae, quadratus lumborum, iliocostalis lorum and thoracis, latissimus dorsi and serratus anterior
Hips	Obturator internus and externus, quadratus femoris, periformis, psoas, rectus femoris, sartorius, tensor facia latae, pectenus, adductor brevis, magnus, and longus, gemellus superior and inferior, pectenus, gluteus maximus, medius, and minimus, semitendinosus, semimembranosus, and biceps femorus.

Table 2. Basic Program Design Suggestions (muscular endurance and muscular strength)

Skill Level	Med Ball Weight	Sets	Reps
Beginner	4–6 Pounds	2–3	8–12 per set
Intermediate	6–8 Pounds	3–4	12–20 per set
Advanced	8–10 Pounds	4–5	20–30 per set

Note: Training for Power Goals: Repetitions should range from 3-5

Table 3. Medicine Ball Circuit

Order	Exercise	Reps	Order	Exercise	Reps
1	Ab Toss	3	8	Rotation Right	3
2	Shoulder Thrust Left	3	9	Ab toss	3
3	Ab Toss	3	10	Isometric Chest Pass	3
4	Shoulder Thrusts Right	3	11	Ab Toss	3
5	Ab Toss	3	12	Isometric Over- head	3
6	Rotation Left	3	13	Ab Toss	3
7	Ab Toss	3			

Total Repetitions: 39

Table 4. Circuit Volume Examples (Based on 13 Exercises in Circuit)

Medicine Ball Weight	Repetitions Per Exercise	Total Repetitions	Total Volume
4	3 x 13	39	156 pounds
	4 x 13	52	208 pounds
	5 x 13	65	260 pounds
6	3 x 13	39	234 pounds
	4 x 13	52	312 pounds
	5 x 13	65	390 pounds
8	3 x 13	39	312 pounds
	4 x 13	52	416 pounds
	5 x 13	65	520 pounds