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## Off-Season Training

### Features

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# Incorporating Pilates Into an Off-Season Training Program

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## Introduction

Pilates has been well-known in the dance world for over half a century. It has been popular in health clubs and fitness centers as a group class option for at least 10 years. According to an article in ACSM's Health & Fitness Journal, Pilates has been one of the top 10 fitness trends in the world since 2008 (4). However, Pilates hasn't reached the same popularity in the competitive athletic community. The purpose of this article is to briefly explain Pilates and then provide a sample workout that would be useful to incorporate as part of an off-season conditioning program.

## Background

Pilates is a form of exercise. There are numerous methods or teaching styles for Pilates. At one end of the spectrum are traditionalists, who teach Pilates following the general practices and protocols provided by the inventor of Pilates, Joseph Pilates. At the other end of the spectrum, there are a number of methods that adapt Pilates to meet safety standards of the twenty-first century. At this end of the spectrum, there is a growing group of rehabilitation specialists—physical therapists and certified athletic trainers—who use Pilates as a tool to aid in their treatment of patients and athletes. A quick MedLine or Sport-Discus database search for Pilates will show that much of the existing scientific literature on Pilates has focused on its use as a rehabilitation tool.

All Pilates methods rely on specific motions that are designed to help teach the participant to activate core muscles. There are Pilates exercises that can be done on a variety of Pilates equipment, called apparatus. The most commonly used apparatus is the Reformer. There are also a wide variety of Pilates exercises that can be done with no specialized equipment, commonly called mat Pilates. However, mat Pilates may use props to assist with the exercises. The props may be as simple as a folded towel, or may utilize equipment commonly seen in the weight room or fitness center, such as a foam roller. The exercises in the sample routine for this article are mat-based exer-

cises, some of which will use a foam roller as a prop. For those readers who are already familiar with Pilates, you can see that the foam roller is substituting for the spine corrector in the exercise shown in figures 17 and 18.

The general goal of Pilates is to improve muscle strength, endurance and flexibility, with special emphasis on the core musculature (3). As discussed in Bernardo's 2007 literature review on Pilates, published in the Journal of Bodywork and Movement Therapies, there is not a significant amount of scientific literature on the efficacy of Pilates exercise (2). This lack of research needs to be corrected if Pilates is to become a valuable part of athletic conditioning programs. Fortunately, the popularity of Pilates in the general fitness community appears to be stimulating more research studies. The most recent issue of the NSCA's Journal of Strength and Conditioning Research included a Pilates study with active middle-aged individuals as subjects. The reported conclusion was that Pilates classes could improve hip flexion, range of motion and trunk flexion endurance if implemented twice weekly (3).

At the most basic level, Pilates exercises can be used to teach individuals how to stabilize one part of the body while moving another (1). For example, maintaining a stable pelvis while moving the hips. At the more advanced level, many Pilates exercises will appear similar to common body weight or calisthenics type exercises. The purpose of this article is to provide you with the knowledge of a few easy to teach and learn Pilates exercises that are well suited for use by athletes. The exercises will concentrate on teaching disassociation, which was defined by Anderson and Spector as "isolating movement at the hip or shoulder girdle, independent of pelvis or spine movement," (1). This isolation of movement results in very precise motions that are often initially difficult for individuals who are highly skilled at sport-specific movements. The reason for this difficulty is because rarely, if ever, are the isolated movements required during a sporting event, or even during activities of daily living (ADL). However,

multiple isolated movements, when combined, result in common sports and ADL movements.

## Rationale For the Exercises

The off-season is the perfect time to introduce new types and methods of training. Pilates is a good option because not only is it almost certainly different from the typical athlete's training program, it may also provide valuable benefits as the athlete progresses through the off-season and begins to prepare for the next season of competition. Typically, in-season training for athletes concentrates on sports-specific movements and movements directly related to improving sports performance. The off-season involves less sport-specific training and more general training. This is an optimal time to work on disassociation, or teaching the athlete to move the shoulder or hip while concentrating on maintaining a stable or controlled core or base.

The goal of this Pilates workout is to allow the athlete to become reacquainted with simpler and less complex movements than those that are commonly required during sports activities. The exercises in this program are designed to help improve motion and control of the shoulder and hip girdles. As mentioned earlier, the body of literature on the effectiveness of Pilates exercise is limited and much of what exists does not use young and active individuals as subjects. However, at the very least, if properly taught, these exercises are an excellent part of a general warm-up or cool-down program, and can help the athletes become more familiar with isolated movements of the shoulder and hip girdles.

Although the exercises described in this article are not as extensive as the twice weekly Pilates sessions described by Kloubec (3), it is still suggested that the program be performed at least twice a week. Since the main goal is to help the athlete become more familiar with isolated shoulder and hip girdle motions it may be possible for the program to be performed more than twice a week with no negative side effects. When

instructing the athlete on correct execution of all exercises keep the following key points in mind:

- all motion should be slow and controlled, without using momentum to make the motion easier
- athletes should not hold their breath when performing the exercises
- perform a single set of 6 – 8 repetitions of each exercise
- encourage the athlete to think of the exercises as easy and fluid
- exercises that are unilateral (side plank and kneeling side kick series should be performed on both sides)

## The Exercises

### Side Plank

The side plank is an excellent exercise for teaching an athlete to move the shoulder girdle and the pelvis in distinct, separate and controlled movements. During the exercise there should be no side to side movement; all movements should be "straight up and down." The side plank has two distinct movement phases. Most athletes will need to start with a modified side plank. The starting position is shown in figure 1. The athlete is sidelying, with the elbow under the shoulder or slightly anterior, resting on the bottom hip with the bottom knee bent to 90 degrees. A progression of this movement would have the athlete starting while bearing weight on their hand (as shown in the full plank in figure 4) instead of the elbow. The initial movement phase is a shoulder girdle movement, which consists of depressing the shoulder girdle as shown in figure 2. The second movement phase of the side plank, as shown in figure 3, requires the athlete to move so that they are bearing weight on the elbow and the bottom knee. Completion of the movement requires the athlete to reverse the two phases. A full side plank, which is the most difficult to achieve is shown in figure 4.

### Reverse Plank

The reverse plank exercise is an excellent exercise for lengthening the anterior shoulder musculature as well as activating the back extensors and hip extensors. This exercise is contraindicated for athletes with shoulder instability problems. The

modified version of this exercise is called table top. The starting position for table top is shown in figure 5. The initial movement phase is thoracic extension as shown in figure 6a for table top, or in figure 6b for reverse plank. An excellent cue for the athlete is to ask them to "stick their chest out." The second movement phase for table top or reverse plank requires the athlete to activate their hip extensors and extend into a table top (figure 7) or a reverse plank (figure 8). It is not uncommon for an athlete to experience hamstring cramping during this the second phase of this exercise; a cue to help prevent this is to encourage the athlete to contract their gluteus maximus or "squeeze their butt." If an athlete has hypertrophied, or short anterior shoulder girdle muscles, there may be a tendency to allow the elbows to bend to make the exercise easier. For athletes who find it uncomfortable to bear weight with their wrists in an extended position, a small folded towel may be placed under the palm to reduce the amount of wrist extension.

### Kneeling Side Kick Series

The kneeling side kick is an excellent exercise for lengthening the lateral trunk muscles as well as teaching the athlete to move their hip independent of their pelvis. The muscles required to perform many of the motions are some of the smaller muscles of the hip, including the six deep rotators, muscles that often are not isolated during most athletic movements. The set up for the exercise is shown in figure 9. The athlete should be encouraged to bear weight in a controlled manner on only the ball of the foot, rather than the entire foot. For athletes who find it uncomfortable to bear weight on their knee an exercise mat can be folded for extra padding or a small towel placed on top of the padded mat. The initial movement is lateral trunk flexion to the kneeling side, as shown in figure 10. It is possible to limit the lateral trunk flexion by placing a small prop, such as a yoga block underneath the weight bearing hand. Once the athlete has achieved the tripod position (foot, knee and hand support) there are a number of hip exercises that can be performed:

- hip abduction as shown in figure 11
- hip flexion/extension in hip abduction; figure 12 shows approximately the mid point of the motion
- knee flexion/extension in hip abduction; figure 13 shows the exercise in the knee flexion

The entire kneeling side kick series would consist of 6 – 8 repetitions each of lateral trunk flexion, hip abduction, hip flexion/extension in hip abductions and knee flexion/extension in hip abduction.

## Seated Twist

The seated twist exercise is an excellent tool for improving hamstring length (by positioning the athlete in a lengthened hamstring position). It also helps to teach trunk movement independent of pelvis or hip movement. It is important to begin the exercise with the athlete sitting upright on their ischial tuberosities. If the hamstrings are short, as shown in figure 14, then a prop such as a folded towel or foam roller can be used to allow the athlete to achieve the upright positioning, as shown in figure 15. The starting position for the exercise is shown in figure 16a. The athlete is sitting upright with arms in approximately scaption. The motion is lateral rotation of the trunk to one side, as shown in figure 16b, independent of other motion. The way to eliminate other motion is to cue the athlete to notice the position of the legs. During the entire rotation movement the legs should not move. If an athlete is shifting his pelvis during the rotation to one side, then you will see the leg opposite of the direction of rotation lengthen. If this occurs it is likely that the athlete is trying to move farther than their torso rotation allows.

## Foam Roller

Individuals familiar with Pilates will recognize that the foam roller, as used in figures 17 and 18, is being used as a spine corrector (one of the Pilates apparatus) is used for some exercises. The starting position as shown in figure 17 has the athlete lying on their back, with the sacrum supported by the foam roller and the lumbar spine in a flexed position. The heels are together with the hips externally rotated, the knees in

line with the second toe and the ankles neutral or slightly dorsiflexed. In Pilates terminology this positioning of the hips, knees and ankles is called “zipped and wrapped.” This terminology is used because the hip rotators are activated to “wrap” the thighs in external rotation. The term “zipped” is used to encourage the athlete to imagine the closing of the space between the medial thighs—like the closing of a zipper. Athletes with tight external hip rotators and/or tight hamstrings may have difficulty initially achieving a fully “zipped and wrapped” position. They may be unable to eliminate the space between the medial thighs, or have difficulty completely extending the knees. The motion from the starting “zipped and wrapped” position requires the athlete to flex the hips and knees, while keeping the heels together and the pelvis stabilized (which is aided by the positioning of the sacrum on the foam roller). The athlete then returns to a “zipped and wrapped” position by extending the hips and knees.

## Conclusion

The Pilates exercises described in this article are only a small number of over 800 exercises. These exercises were chosen because they are easy to teach and learn, but they are also suitable for helping to develop the ability to move the shoulders or hips while concentrating on maintaining a stable or controlled core or base. These exercises can introduce the professional and athlete to Pilates. For those who decide to pursue further education in Pilates, I would encourage them to research the various teaching styles. The best option would be to seek out a style that has adapted the original Pilates exercise to ensure safety and current knowledge of human anatomy and physiology. There are a number of education programs run by physical therapists or other rehabilitation professionals, and these may offer the most effective and safe education. ■

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## Pilates For Off-Season Sample Program

### Goal

To allow the athlete to become reacquainted with simpler and less complex movements than those that are commonly required during sports activities. The exercises in this program are designed to help improve motion and control of the shoulder and hip girdles.

### Sets and Reps

1 set of up to 6 – 8 repetitions

### Frequency

At least twice a week; may be performed before/after activities as part of a generalized warm-up/cool-down

## Exercises

### Side Plank

Figure 1 • Side plank start

Figure 2 • Side plank shoulder girdle lift

Figure 3 • Side plank hip lift

Figure 4 • Full side plank

### Reverse Plank

Figure 5 • Reverse plank start

Figure 6a • Preparation for table top w thoracic extension

Figure 6b • Preparation for reverse plank w thoracic extension

Figure 7 • Table top

Figure 8 • Reverse plank

### Kneeling Side Kick Series

Figure 9 • Kneeling side kick start

Figure 10 • Kneeling side kick lateral trunk flexion

Figure 11 • Kneeling side kick in hip abduction

Figure 12 • Kneeling side kick hip flexion/extension in hip abduction

Figure 13 • Kneeling side kick knee flexion/extension in hip abduction

### Seat Twist

Figure 14 • Seated twist long sit

Figure 15 • Seated twist long sit on foam roller

Figure 16a • Seated twist—Start

Figure 16b • Seated twist—Twist

### Foam Roller

Figure 17 • Hip flexion w external rotation

Figure 18 • Frog



Figure 1. Side Plank Start



Figure 2. Side Plank Shoulder Girdle



Figure 3. Side Plank Hip Lift



Figure 4. Full Side Plank



Figure 5. Reverse Plank Start



Figure 6a. Preparation for Tabletop With Thoracic Extension



Figure 6b. Preparation for Reverse Plank With Thoracic Extension



Figure 7. Tabletop



Figure 8. Reverse Plank



Figure 9. Kneeling Side Kick Start



Figure 10. Kneeling Side Kick Lateral Trunk Flexion



Figure 11. Kneeling Side Kick Hip Abduction



Figure 12. Kneeling Side Kick Hip Flexion Extension in Hip Abduction



Figure 13. Kneeling Side Kick Knee Flexion Extension in Hip Abduction



Figure 14. Seated Twist Long Sit



Figure 15. Seated Twist Long Sit on Foam Roller



Figure 16a. Seated Twist Start



Figure 16b. Seated Twist Twist



Figure 17. Hip Flexion With External Rotation



Figure 18. Frog

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