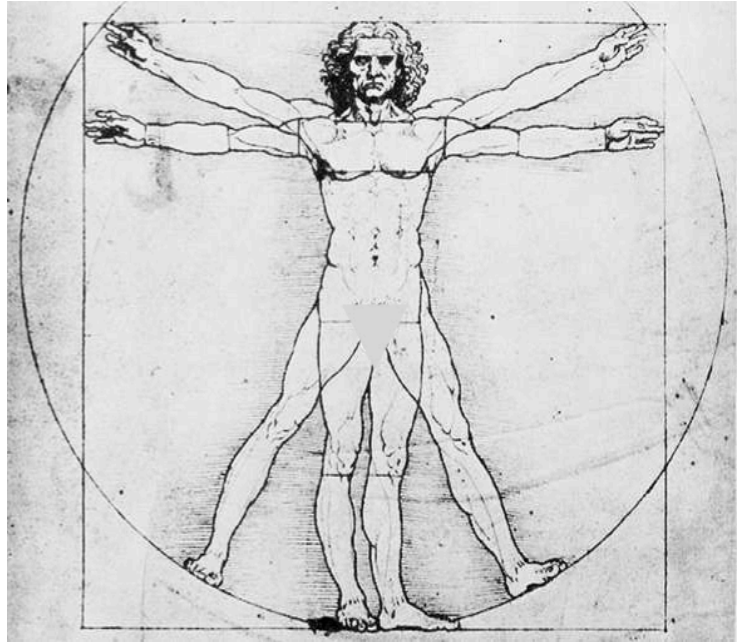
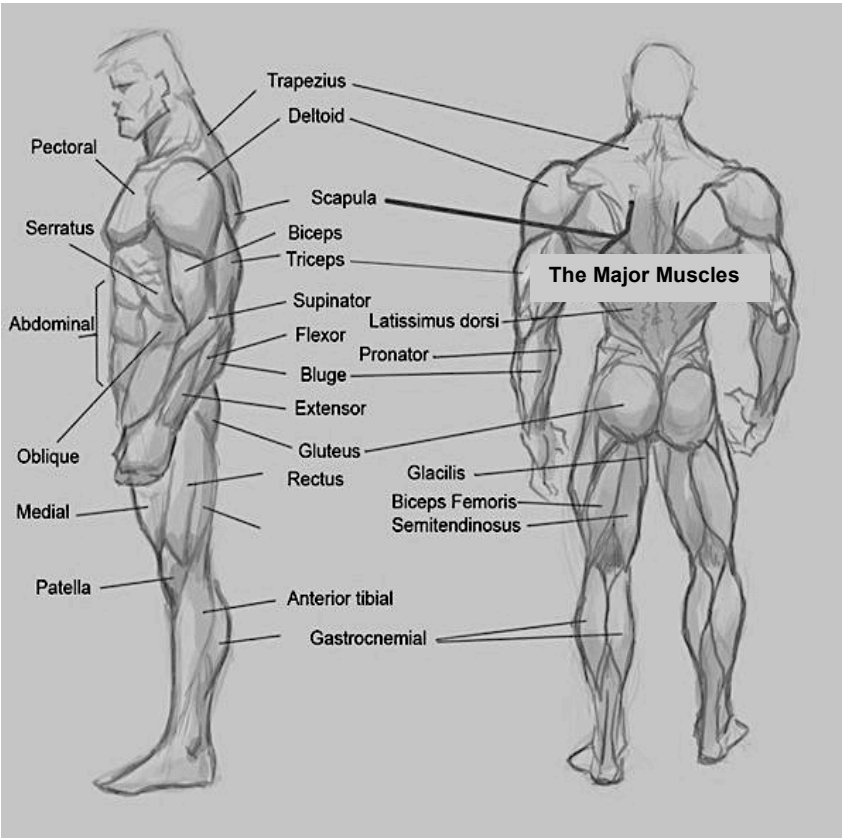


# HIGH-INTENSITY INTERVAL TRAINING



•• FOR ALL LEVELS OF FITNESS ••



Prepared by  
Wisconsin Books to Prisoners  
by request from prisoners in Wisconsin  
- 2018 -



1. Jumping jacks

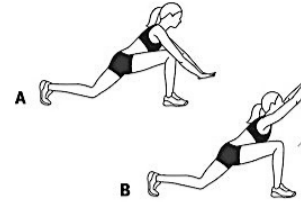


2. Wall sit



3. Push-ups

#### 4. The Low Lunge Arch



(A) With your right foot, step forward into a lunge and lower your left knee onto the floor. Bring your arms in front of your right leg and hook your thumbs together, palms facing the floor.

(B) Breathe in as you sweep your arms overhead, stretching as far back as is comfortable. Take five deep breaths. Switch sides.

#### 5. The Seated Back Twist

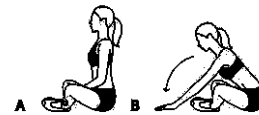


(A) Sit on the floor with your legs straight. Bend your right knee and step your right foot over your left leg. Put your right hand on the floor, fingers pointing outward, for support. Bend your left elbow and turn to the right, placing the back of your arm against your right knee. Inhale as you sit tall.

(B) Breathe out as you twist, pressing your arm into your leg and looking over your right shoulder. Hold for five breaths, then slowly return to the center.

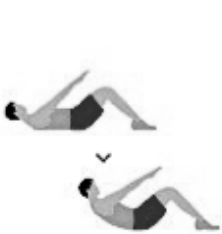
Switch sides.

#### 6. The Bound Angle



(A) Sit on the floor with your legs straight. Bend your knees and bring the soles of your feet together, letting your knees drop toward the ground. Hold your shins as you inhale and stretch your chest upward.

(B) Exhale as you hinge forward from your hips (without rounding your back) and place your palms on the ground. Hold for five slow breaths.



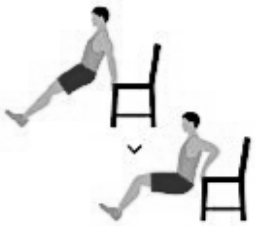
4. Abdominal crunches



5. Chair step-ups



6. Squats



7. Triceps dips



8. Planks



9. High knees running



10. Lunge



11. Push-up and rotation



12. Side plank

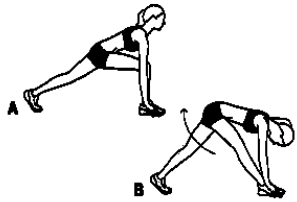
## 8. Bent-Over Row 60 seconds

Holding dumbbells, lean forward, knees bent, back straight. Lift one dumbbell until it reaches chest height (as if rowing). Lower. Lift dumbbell on other side and lower. Repeat on each side while maintaining bent-over position.



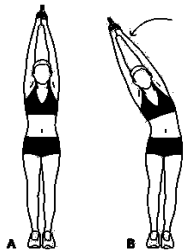
## Full Body Stretches

### 1. The Runner's Stretch



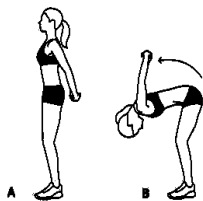
(A) Step your right foot forward and lower into a lunge, placing your fingertips on the floor or on two firm cushions if your hands don't reach. (B) Breathe in, then, in one motion, exhale as you straighten your right leg. Slowly return to the lunge position. Repeat 4 times. Switch sides.

### 2. The Standing Side Stretch



(A) Stand with your feet together and your arms straight overhead. Clasp your hands together, with your fingers interlaced and pointer fingers extended. Inhale as you reach upward. (B) Breathe out as you bend your upper body to the right. Take five slow breaths. Slowly return to the center. Repeat on the left side.

### 3. The Forward Hang



(A) Stand with your feet hip-distance apart and your knees slightly bent. Interlace your fingers behind your back. (If your hands don't touch, hold on to a dishtowel.) Breathe in and straighten your arms to expand your chest. (B) Exhale and bend at your waist, letting your hands stretch toward your head. Hold for five deep breaths.

## High-Intensity-Interval Training aka HIIT

Research shows that high-intensity interval training (HIIT)—workouts which pair quick bouts of intense exercises with short recovery periods—leads to similar and, in some cases, superior improvements in cardiovascular, respiratory, metabolic and mechanical functions than exercise programs based solely on weight-lifting or prolonged steady-state cardio (you know: just doing the same thing like jogging or cycling for your whole workout time). In short, HIIT produces a broad range of physiological gains that equates to doing *both* a long run and a weight-training session in time-efficient way (for more detail see pages 8 & 9).

There are many variations of HIIT workouts but you get the most benefit when the exercises alternate sequentially between challenging the cardiovascular system and three muscle groups—namely, lower body, upper body and core. Done in sequence, HIIT workouts insure that each muscle group gets a nearly two minute rest before working again.

The grandfather, so to speak, of HIIT workouts was the 7-Minute Workout designed by exercise physiologists at the Human Performance Institute. It includes the twelve exercises shown at left and is completed as follows: Beginning with jumping jacks, you do the exercises as many times as you can in 30 seconds, then you give yourself a break for 5 seconds, then you do the wall sit for 30 seconds and again rest for 5 seconds. Then, you do as many pushups as you can for 30 seconds, rest for 5, and so on until you get through all 12 exercises.

Throughout each exercise, the intensity of your effort should hover at 90% of your maximum heart rate; this translates to about 8-9 on a discomfort scale of 1 to 10. Those seven minutes of exercises should be, in a word, unpleasant.

Research shows that 30 minutes of HIIT three times per week produces the best results while limiting injury. Interval training pushes the body hard, so it is important to be fully recovered between sessions. Take the time to stretch too. For some illustrations of fully-body stretches see page

Regardless of what shape you're in, remember to listen to your body and work out according to your current level of fitness and ability. If you are previously injured, or elderly, or just out of shape, start very slowly. You might actually require several months to scale up your workout to a level of intensity that will provide the physiological benefits. Begin with your

To calculate your maximum heart rate, subtract your age from 220. For example, if you are 45 years old your maximum heart rate would be 175. Ninety percent of 175 equals 158; this is ideal the rate your heart should beat per minute during intense exercise.

best effort and as you gain strength and endurance, you can intensify the workout by extending the length of the exercise intervals adding weights (see the Advanced 7-Minute Workout below, which adds dumbbells to the routine). If you add seconds to an exercise routine, add them incrementally with a maximum time of 60 seconds (unless your body building) and add at least an equivalent number of seconds to the recovery interval too.

Lastly, the 7-Minute Workout isn't limited to the 12 original exercises. In fact, any routine, if that's all you do, becomes monotonous and demotivating, so modify your workouts (see Build Your Own Modified Workout below).

**Cautionary note:** For those with aging knees and elbows, those carrying extra weight and those just out of shape, even jumping jacks may be a challenge. If you can't do an exercise, say a standard push-up, you can always find an easier substitute that challenges the same group of muscles like a kneeling or wall push-up. You can also adjust the rest interval. Instead of five seconds between exercises, try 10 seconds and make it an 8-minute workout, or rest 15 seconds and make it a 9-minute workout. As you improve and want a more challenging workout double or triple the length of the workout, but unless you are trying to develop the musculature of a body builder, extending the duration of the workout longer than 30 minutes doesn't appear to improve the benefits. Just give it a go!

## Build Your Own Modified Workout

Choose an exercise from each of the four groups below that you can do successfully using proper form, without pain. (Note that they are not organized in terms of difficulty.)

Once you've picked your cardio, lower body, upper body and core exercises, repeat the sequence of exercise and rest three times (for a total 7 – 9 minutes). If you want variety, you can choose different exercises for round two and three — just make sure you stick with the correct order of exercise groups. Note that there is of course cross over of muscle groups with many of the exercises and the cardio value of any exercise that is not a "hold" (like a plank or the wall sit) increases as you increase the number of reps per session.

Even if you pick the easiest exercise for you, the key is to push yourself really hard for 30 seconds, so that you get the full benefit. It should be challenging, but not painful. Over time you should be able to perform these routines with smooth, athletic coordination. Repeated, say, every other day, the routine will make you healthier, stronger, less prone to injury and athletically more capable.

### 4. Lateral Pillar Bridge (right)

30 seconds

Lie on right side. Lift side off ground. Point left arm toward sky. Hold.

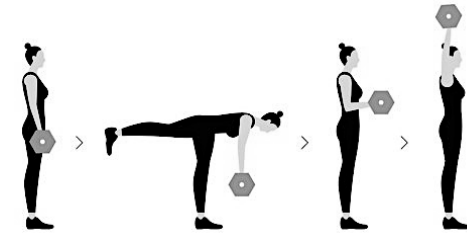


### 5. Single-Leg Romanian Dead Lift to Curl to Press

30 seconds each side

Hold dumbbells at hips. Lean forward, balancing on left leg while extending right leg back (aka the Romanian dead lift). Return to start position. Curl dumbbells toward chest (the curl). Raise both dumbbells over head (the press).

Lower weights to chest. Lower weights to hips and resume starting position. Repeat for right side. Repeat.



### 6. Plank With Arm Lift

30 seconds

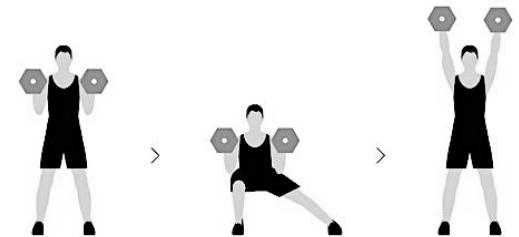
Assume push-up position (also known as a plank). Lift one arm in front of you. Lower. Lift other arm. Repeat rapidly.



### 7. Lateral Lunge to Overhead Triceps Extension

60 seconds

Stand straight, holding dumbbells at shoulder height. Take big step to right side, bending right knee while keeping left leg straight (a lateral lunge). Return to upright. Lift dumbbells over head. Lower them back toward shoulder. Step to other side. Repeat.



## The Advanced 7-Minute Workout

Remember to wisely gauge your body's tolerance to the physical stress and take into account the feedback you're getting from your body to calibrate the intensity and frequency of your workout.

Each exercise should be followed by an interval of rest, generally between 5 and 15 seconds long.

### 1. Reverse Lunge - Elbow to Instep With Rotation - Alternating Sides

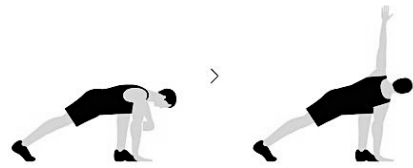
30 seconds

Extend your right leg behind you, with left knee bent and right hand on ground (the reverse lunge).

Bend left arm and bring inside front of left knee, then raise and point right arm and chest skyward (rotation).

Place both hands on ground while straightening both legs and flexing ankles; return to standing position.

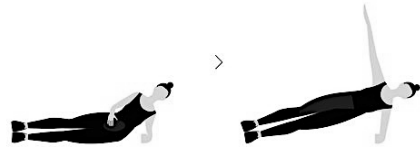
Repeat with left leg and right arm. Repeat.



### 2. Lateral Pillar Bridge (left)

30 seconds

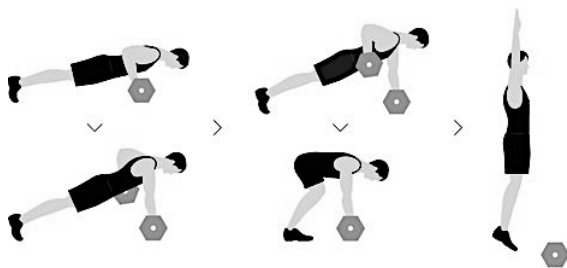
Lie on left side. Lift side off ground. Point right arm toward sky. Hold.



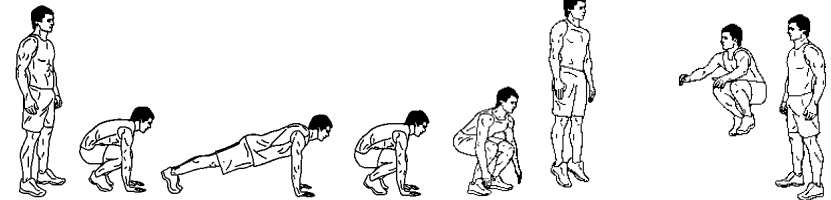
### 3. Push-Up to Row to Burpee

60 seconds

Position self over both dumbbells, legs extended back. Do a push-up. Lift and lower right dumbbell, then left dumbbell (as if rowing). Rapidly pull legs forward. Release dumbbells. Jump forcefully upward (completing a burpee).

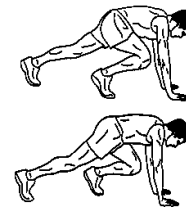


## Cardio

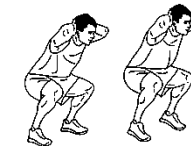


burpees

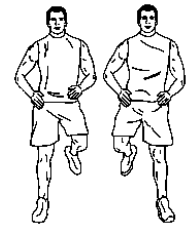
jump ups



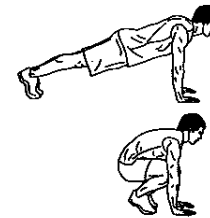
climbers



squat hops



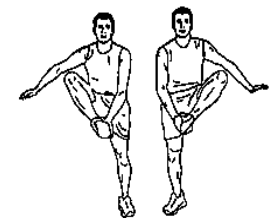
side to side hops



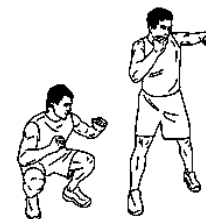
squat thrusts



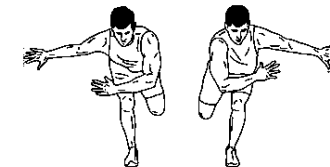
jumping lunges



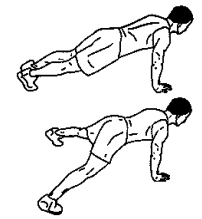
toe tap hops



squat & hook



dodges



plank jacks

The cardio part of your workout can also include sprints, cycling sprints, jumping rope, variations on jumping jacks, and any other exercises that makes your heart pump close to its maximum rate.

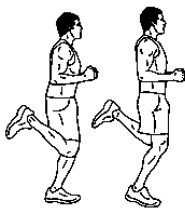
## Lower Body



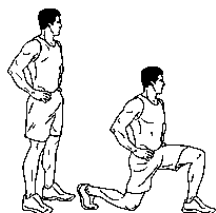
march steps



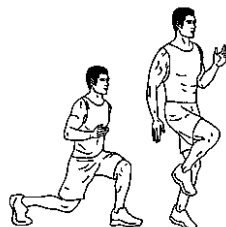
calf raises



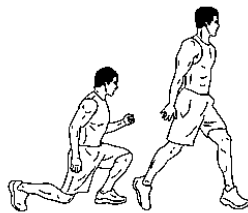
butt kicks



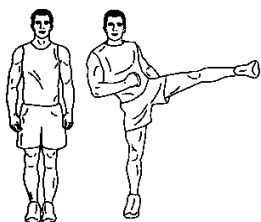
lunge



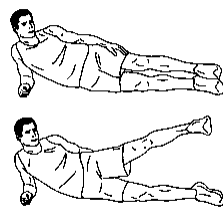
lunge step-up



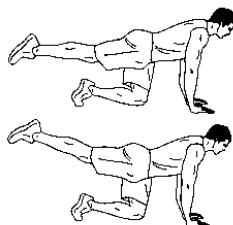
jumping lunge



standing leg raises



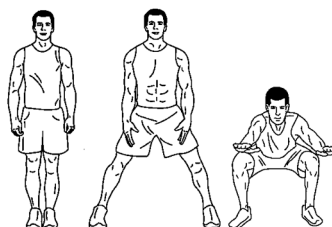
side leg raises



leg raises



Cossack squats



half-jack squat

- **Reverses age-related muscle decline**

HIIT causes cells to make more proteins for their energy-producing mitochondria (their powerhouses) increasing their size and number. This in short, translates into anti-aging benefits at the cellular level in skeletal muscles.

- **Improves maximal oxygen intake or VO2 max**

VO2 max is the maximum amount of oxygen your body can use in a set amount of time, and it's dependent upon how many red blood cells you have, how adapted you are to endurance activities, and how much blood your heart can pump - essentially, an athlete's VO2 max score is generally considered by exercise physiologists to be one of the best indicators of the athlete's cardiovascular fitness and aerobic endurance. HIIT increases VO2 max more efficiently than other exercise regimes.

- **Helps build endurance**

HIIT adapts to the cellular structure of muscles enabling you to increase your endurance while doing any type of exercise. In one study where people participated in HIIT for eight weeks, the results showed that they had doubled the length of time they could ride a bicycle while keeping the same pace.

- **Strengthens muscles throughout the body**

Traditional cardio or endurance workouts improve overall fitness and health, but typically do little to improve muscular strength other than in the legs. HIIT, in addition to strengthening the quads and glutes, also engages smaller, often overlooked muscles in the back, abdomen, shoulders and hips that, when neglected and weak, contribute to back, neck and knee pain.

### The Bottom Line:

- **Maximum health benefits in minimal time**

Within a time commitment of no more than 30 min per session, high intensity interval training has been shown to improve aerobic capacity, skeletal muscle oxidative capacity, exercise tolerance and markers of disease risk after only a few weeks in both healthy individuals and people with cardio-metabolic disorders. HIIT is perhaps the most time-efficient exercise strategy to improve metabolic and cardiovascular health, body composition, and athletic performance.

## What are the advantages of high-intensity interval training?

- **Burns more calories during a workout than traditional aerobic/cardio training.**

One study found that 30 minutes of HIIT burned 25–30% more calories than the equivalent time spent weight training, running, or biking. Another study showed that 27 minutes of HIIT three times a week is equal to 60 minutes of jogging five times a week.

- **Burns more calories *after* a workout than traditional aerobic/cardio training.**

After an exercise session, oxygen consumption (and thus caloric expenditure) remains elevated as the working muscle cells restore physiological and metabolic factors in the cell to pre-exercise levels. This translates into higher and longer calorie burning after exercise has stopped. One study, e.g., showed that just two minutes of HIIT exercise elicits 24-hr oxygen consumption or "after burn" similar to that of 30 min of continuous endurance exercise.

- **Boosts fat metabolism without muscle loss**

By combining cardio exercises with weight training (the weight being your body) muscle mass is preserved while still shedding weight.

- **Reduces visceral fat and helps lower your blood sugar levels**

Visceral fat is a type of body fat that's stored within the abdominal cavity and is located around a number of important internal organs such as the liver, pancreas and intestines. It can also build up in arteries. The higher the amount of visceral fat a person stores the more at risk they are for health complications, including insulin resistance, type 2 diabetes, heart disease and colorectal cancer.

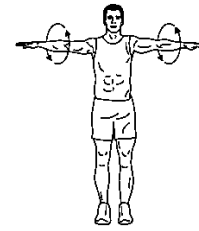
- **Reduces heart rate and blood pressure**

HITT improves vascular function by increasing the flexibility and elasticity of arteries and veins, which can lower blood pressure.

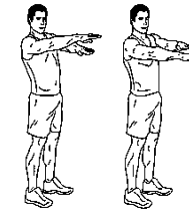
- **Naturally stimulates production of human growth hormone (HGB)**

Human growth hormone has been known to improve physical capacity of individuals through stimulating collagen synthesis in the skeletal muscle and tendons, increasing muscle strength and improving exercise performance as a result.

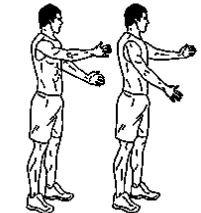
## Upper Body



raised arm circles



horizontal arm scissors



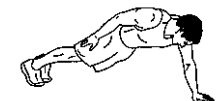
vertical arm scissors



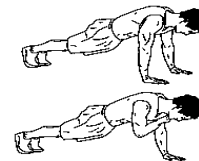
angels



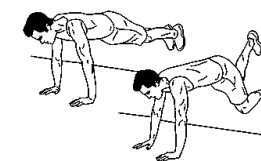
push up hold



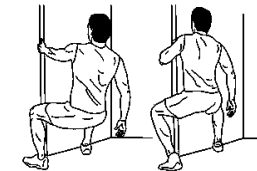
one arm plank hold



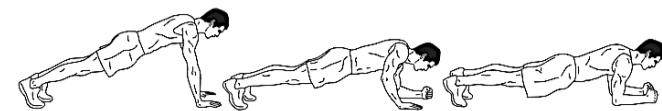
shoulder taps



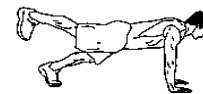
wall mountain climbers



door frame rows



up and down elbow planks



raised leg push ups

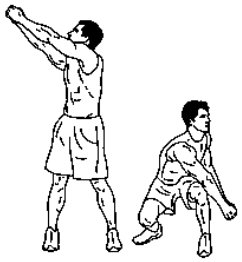


clapping push up



plank walkouts

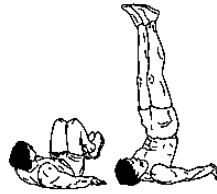
# Core



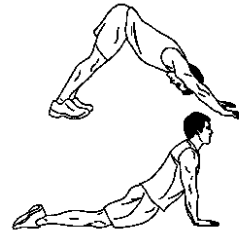
cross chops



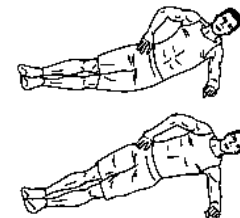
elbow plank hold



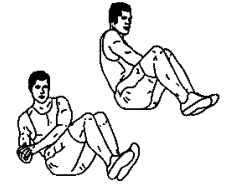
butt-up



up and down dog



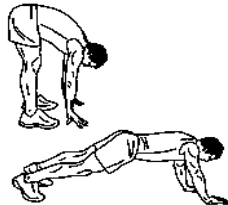
side bridges



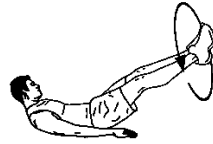
sitting twists



back arch hold plank



plank walk outs



raised leg circles



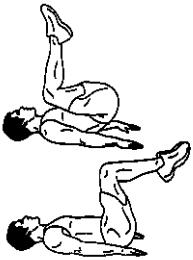
knee-to-elbow crunches



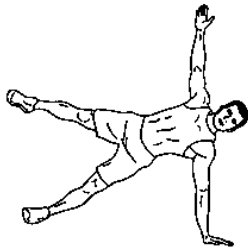
star plank



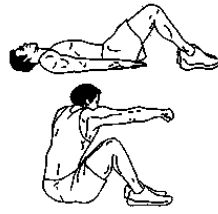
plank rotations



reverse crunches



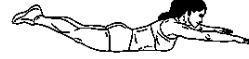
5 point star hold



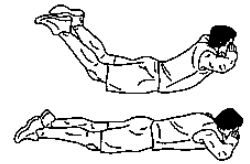
punch sit-ups



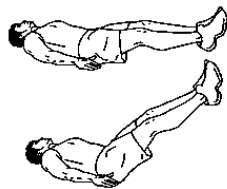
superman extensions



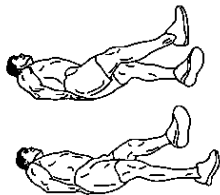
side bridges



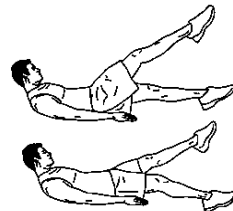
back extensions



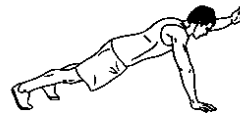
leg raises



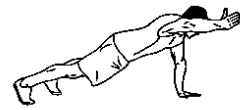
scissors



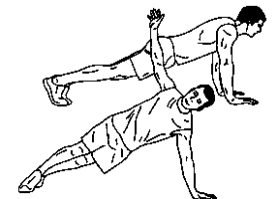
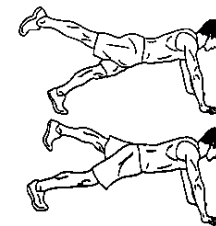
flutter kick



plank arm raises



alternating leg planks



plank roles