

YOUR 3 STEP

KNEE OSTEOARTHRITIS EXERCISE PROGRAM

Brought to you by  SYNVISC ONE
HYLAN G-F 20

There are three kinds of exercise that are very important for joint health: aerobic exercise, strength training, and flexibility training.

This program features an optimum combination of these exercises, and it's based on a workout that produced impressive results in a Tufts University study¹ involving a 16-week home-based, exercise program for men and women over 50 with knee osteoarthritis.

Before You Get Started:

First, check with your Doctor before starting this program or changing your current routine.

Second, take some time to review the exercises and begin the program when you're confident you've learned the proper form.

Third, get yourself into a good pair of shoes and keep the equipment you'll need nearby: a strong chair, a pillow and a blanket or towel.

1. AEROBIC EXERCISES

Also called cardiovascular (cardio) workouts, aerobic exercises come in two forms: weight-bearing, where your legs support the weight of your body and non-weight-bearing, where the load on your legs is decreased. Be sure to mix it up and do what feels okay for your knees.

Aerobic Exercises GOAL: 20 minutes (inc. 3-5 minute low-impact warm-up), 3 days a week



Aerobic activity is important for warming up your muscles and joints. Try these simple exercises to get loosened up before your strength and flexibility training:

- Go for a walk around your neighborhood
- Take a ride on your regular or stationary bike
- Swim a few laps or grab a kickboard and paddle around

Just get moving! March in place, swing your arms, dance around — anything to start working your muscles, get your heart rate up and help improve your overall fitness level. Just be sure to take slow small strides if you are feeling stiff and sore, and pick up the pace as you loosen up. There's no prize for speed — only do what's comfortable for you.

¹ Baker, Kristin R., Nelson, Miriam E., et al. "The Efficacy of Home Based Progressive Strength Training in Older Adults with Knee Osteoarthritis: A Randomized Controlled Trial." *The Journal of Rheumatology*. 2001; 28:7.

Please see *Important Safety Information on pages 5 and 6. Please see Patient Information on page 6.*

©2010 Genzyme Corporation. All rights reserved. Synvisc-One and GENZYME are registered trademarks of Genzyme Corporation.

2. STRENGTH TRAINING

Muscles are more than engines to help us move. They also act as the body's shock absorbers. And, the stronger the muscles around the hip and knee, the better the shock absorption and stability — meaning less strain (and pain) on the joint.

The Knee Extension *GOAL: 2 sets of 12 knee extensions on each side*

You'll start by focusing on the quadriceps (quad) muscle, located on the front of your thigh.



1. Sit in a chair with your back against the backrest if possible and your knee at a 90° angle. You can put a towel under your knee if you need to.
2. Straighten out your knee, lifting your foot from the floor.
3. Hold it here for 1-3 seconds, focusing on your quad muscle, then slowly lower back down.
4. If a full knee extension is too painful or doesn't feel right, extend to where it is comfortable.
5. You can hold it out longer or add ankle weights as you progress.

The Modified Squat *GOAL: 2 sets of 12 modified squats*

This exercise uses your quad (front of the thigh) muscles and also engages the glute (buttocks) and hamstring (back of the thigh) muscles. A simple way to ease into a proper squat is to use a sturdy chair. If the chair is too low for you, put a pillow or folded blanket on top of the seat.



1. Start in front of the chair and bend your knees slowly like you are going to sit down.
2. Continue to slowly lower yourself into the chair, leading with your buttocks and keeping your hips, knees and ankles all in alignment.
3. Your knees should be pointing out over your second and third toes.
4. You should feel this in your quadriceps and hamstrings and maybe your glutes.
5. Make sure you support your back by keeping your abdominals (stomach) engaged.
6. Come back up as slowly as you sat down. The slower you move, the better.
7. If you can't make it back up easily, you can sit in the chair before standing back up.
8. You'll build up your strength in no time the more you practice.

The Step-Up *GOAL: 2 sets of 12 step-ups on each side*

For this exercise you'll need a staircase with a handrail. Even a landing with one step is okay as long as there is a rail for support.



1. Stand facing the stairs with one of your feet on the bottom stair.
2. Make sure your knee and ankle are in alignment with each other.
3. Lift your body up slowly from the floor using the muscles of your top leg, being sure to keep your knee from going over your toes.
4. When your back leg is even with the step, pause.
5. Then, slowly lower yourself back down again focusing on the muscles of your top leg.
6. It's very easy to lean and use your trunk for compensation during this exercise, so really try to focus on using only your leg muscles.
7. Pay attention to where your knee is — it should be going straight over your toes but not past them.
8. Keep your abdominals (stomach) engaged for core support and do these slowly.

Please see Important Safety Information on pages 5 and 6. Please see Patient Information on page 6.

©2010 Genzyme Corporation. All rights reserved. Synvisc-One and GENZYME are registered trademarks of Genzyme Corporation.

3. FLEXIBILITY TRAINING

Also known as stretching, these exercises help relieve stiff joints and improve your range of motion. Muscles work best when they are at optimum length, improving mobility. Stretching daily will let you increase your strength training without pain. The biggest challenge with stretches is holding them for a proper length of time. Stretch for at least 20 to 30 seconds and at least 2 times to change muscle length. These stretches shouldn't hurt, but you should feel a slight pull in the muscle. Be sure to breathe through the stretch to relax your muscles.

The Quadriceps Stretch *GOAL: Hold the quadriceps stretch for 30 seconds twice on each side*



1. Stand near your sturdy chair and hold on with one hand.
2. Bend your knee and, with the other hand, grab your ankle.
3. Pull your heel toward your buttocks.
4. Make sure you keep your knees in line with each other and stand up tall.
5. You should feel this stretch in the front of your thigh (quad), and you may even feel it higher up in your hip flexor.
6. Stop if you feel any pain at all in your knee, then reposition and try again.
7. If you still have pain in your knee, you should wait until there is less inflammation before trying this exercise again.

The Achilles Stretch *GOAL: Hold the Achilles stretch for 30 seconds twice on each side*



1. Stay near your chair or move over to a wall for this one.
2. Put the foot you'll be stretching behind you and the other foot in front of you — like you just took a large step.
3. Place your hands against the wall or chair.
4. Make sure your toe and heel are in line with one another.
5. Bend the front foot until you feel a stretch in the calf and Achilles tendon (connects your calf to your heel) of the back foot.

The Hamstring Stretch *GOAL: Hold the hamstring stretch for 30 seconds twice on each side*



1. Lay on your back (on the floor or your bed) with your knees bent.
2. Pull one knee up toward you and put your hands behind your knee.
3. Slowly straighten that knee until a stretch is felt in the back of your leg (hamstring).
4. If this is uncomfortable you can use a towel. Put it around the bottom of your foot and gently pull toward you.

Please see *Important Safety Information* on pages 5 and 6. Please see *Patient Information* on page 6.

©2010 Genzyme Corporation. All rights reserved. Synvisc-One and GENZYME are registered trademarks of Genzyme Corporation.

WEEKLY EXERCISE LOG

Print a few copies of this exercise log and use them to keep track of the exercises you've completed each day and the progress of your strength, flexibility and aerobic fitness over time.

	Sample	MON	TUES	WED	THURS	FRI	SAT	SUN
Date	01/01/11							
Aerobic Exercises								
Exercise/Time (20 minutes, 3x per week)	Walked/ 30 min							
Strength Training								
Knee Extensions (2 sets of 12)	Set 1: 12 Set 2: 11							
Modified Squats (2 sets of 12)	Set 1: 12 Set 2: 10							
Step-Ups (2 sets of 12)	Set 1: 12 Set 2: 12							
Flexibility Training								
Quadriceps Stretch (2 sets, 30 seconds each)	Set 1: 30 Set 2: 28							
Achilles Stretch (2 sets, 30 seconds each)	Set 1: 30 Set 2: 30							
Hamstring Stretch (2 sets, 30 seconds each)	Set 1: 30 Set 2: 28							

Please see Important Safety Information on pages 5 and 6. Please see Patient Information on page 6.

©2010 Genzyme Corporation. All rights reserved. Synvisc-One and GENZYME are registered trademarks of Genzyme Corporation.

EXERCISE TIPS



Shoes and Surfaces

Avoid open shoes or shoes that don't fit properly as they can cause your feet to slide around — making your hips, knees and ankles work harder to steady you. Also try to avoid walking on uneven surfaces, like a rolling golf course or a sandy beach, because it takes a lot more work and can leave you feeling sore and stiff.



Lift Up, Ice Up

Remember: ice and elevation as needed. After an active workout, put your feet up on pillows to minimize swelling. Ice is great for inflammation and pain. Put a bag of frozen corn or peas on your knees for about 10 minutes. And be sure to wait at least an hour between icing sessions.



Stay Committed

Exercise is a lifelong commitment. You're probably feeling a little discomfort now; that's to be expected. But regular exercise provides many benefits — including less osteoarthritis knee pain and more energy. Plus, you'll be helping to lower your chances of suffering from other chronic diseases resulting from excess weight.

THIS PROGRAM BROUGHT TO YOU BY



Miriam Nelson, Ph.D. is the founder of StrongWomen, and author of many international bestsellers. Her research has helped people understand nutrition, strength training, aging and health.



Meghan Tierney, PT, MPT, OCS is a licensed physical therapist, an orthopedic clinical specialist and certified Pilates instructor.



Synvisc-One® (hylan G-F 20) is a treatment for osteoarthritis knee pain sufferers who've tried diet, exercise and over-the-counter pain medication but still have pain. If you're looking for osteoarthritis knee pain relief that may help you get back to an active lifestyle, talk to your doctor to see if Synvisc-One is right for you.

Indication

Synvisc-One® (hylan G-F 20) is indicated for the treatment of pain in osteoarthritis (OA) of the knee in patients who have failed to respond adequately to conservative non-pharmacologic therapy and simple analgesics, e.g., acetaminophen.

Important Safety Information

Before trying Synvisc-One, tell your doctor if you have had an allergic reaction to SYNVISC or any hyaluronan-based products; or if you have an infected knee joint, skin disease or infection around the area where the injection will be given, or circulatory problems in the legs. Synvisc-One is only for injection into the knee, performed by a doctor or other qualified health care professional. Synvisc-One has not been tested to show pain relief in joints other than the knee. Tell your doctor if you are allergic to products from birds — such as feathers, eggs or poultry — or if your leg is swollen or infected. Synvisc-One has not been tested in children, pregnant women or women who are nursing. You should tell your doctor if you think you are pregnant or if you are nursing a child. Talk to your doctor before resuming strenuous weight-bearing activities after treatment. **(continued on next page)**

Please see Important Safety Information on pages 5 and 6. Please see Patient Information on page 6.

©2010 Genzyme Corporation. All rights reserved. Synvisc-One and GENZYME are registered trademarks of Genzyme Corporation.

Important Safety Information (continued)

The side effects (also called reactions) sometimes seen after any injection into the knee, including Synvisc-One, include (<2% each): pain, swelling, heat, redness, and/or fluid build-up in or around the knee. These reactions were generally mild and did not last long, but in rare occasions these side effects were more severe. The most commonly occurring adverse events outside of the injected knee were headache, back pain, sore throat, the flu and faintness. Allergic reactions such as rash and hives have been reported rarely in association with SYNVISC.



PATIENT INFORMATION

Be sure to read the following important information carefully. This information does not take the place of your doctor's advice. If you do not understand this information or want to know more, ask your doctor.

Glossary of Terms

Hyaluronan (pronounced hy-al-u-ROE-nan): is a natural substance that is present in very high amounts in joints. It acts like a lubricant and a shock absorber in the joint and is needed for the joint to work properly.

Non-steroidal anti-inflammatory drugs: also known as "NSAIDs"; medication used to treat pain or swelling. There are many examples of NSAIDs, including (but not limited to) aspirin and ibuprofen. Some of these are over-the-counter drugs, and some can be obtained only by prescription.

Osteoarthritis (pronounced OS-te-o-arth-RI-tis): (OA) is a type of arthritis that involves the wearing down of cartilage (the protective covering on the ends of your bones) and loss of cushioning fluid in the joint.

Table of Contents

- Glossary of Terms
- Table of Contents
- What is the Synvisc-One® product?
- How is the Synvisc-One® product used? (Indications)
- How is the Synvisc-One® product given?
- Are there any reasons why I should not receive a Synvisc-One® injection? (Contraindications)
- What should my doctor warn me about?
- What are the risks of getting a Synvisc-One® injection?
- What are the benefits of getting a Synvisc-One® injection?
- What do I need to do after I get a Synvisc-One® injection?
- What other treatments are available for OA?
 - Non-drug treatments
 - Drug therapy
- When should you call your doctor? (Troubleshooting)
- What adverse events were observed in the clinical study?
- How do I get more information about the Synvisc-One® product? (User Assistance)

What is the Synvisc-One® product?

Synvisc-One is a gel-like mixture that comes in a syringe containing 6 mL (1½ teaspoon) and is injected into your knee. It is made up of hylan A fluid, hylan B gel, and salt water. Hylan A and hylan B are made from a substance called hyaluronan (pronounced hy-al-u-ROE-nan), also known as sodium hyaluronate that comes from chicken combs. Hyaluronan is a natural substance found in the body and is present in very high amounts in joints. The body's own hyaluronan acts like a lubricant and a shock absorber in the joint and is needed for the joint to work properly.

How is the Synvisc-One® product used? (Indications)

The FDA-approved indication for Synvisc-One is: Synvisc-One is indicated for the treatment of pain in osteoarthritis (OA) of the knee in patients who have failed to respond adequately to conservative nonpharmacologic therapy and simple analgesics, e.g., acetaminophen.

How is the Synvisc-One® product given?

Your doctor will inject Synvisc-One into your knee.

Are there any reasons why I should not receive a Synvisc-One® injection?

(Contraindications)

Your doctor will determine if there is any reason why you are not an appropriate candidate for Synvisc-One. You should be aware that Synvisc-One:

- Should not be used in patients who have had any prior allergic reactions to Synvisc, Synvisc-One or any hyaluronan-based products. Signs of an allergic reaction may include swelling of your face, tongue, or throat; difficulty breathing or swallowing; shortness of breath; wheezing; chest pain; a tightness in your throat; sleepiness; rash; itching; hives; flushing; and/or fever.
- Should not be used in patients with a knee joint infection, skin disease or infection around the area where the injection will be given, or circulatory problems in the legs.

What should my doctor warn me about?

The following are important treatment considerations for you to discuss with your doctor and understand in order to help avoid unsatisfactory results and complications:

- Synvisc-One is only for injection into the knee, performed by a doctor or other qualified health care professional. Synvisc-One has not been tested to show pain relief in joints other than the knee.
- Synvisc-One has not been tested to show better pain relief when combined with other injected medicines.
- Tell your doctor if you are allergic to products from birds such as feathers, eggs, and poultry.
- Tell your doctor if you have significant swelling or blood clots in the leg.
- Synvisc-One has not been tested in pregnant women, or women who are nursing. You should tell your doctor if you think you are pregnant, or if you are nursing a child.
- Synvisc-One has not been tested in children (≤21 years of age).

What are the risks of getting a Synvisc-One® injection?

The side effects (also called reactions) sometimes seen after any injection into the knee, including Synvisc-One, include: pain, swelling, heat, redness, and/or fluid buildup around the knee. These reactions are generally mild and do not last long. Reactions are generally treated by resting and applying ice to the injected knee. Sometimes it is necessary to give pain relievers by mouth such as acetaminophen or NSAIDs, or to give injections of steroids, or to remove fluid from the knee joint. Patients rarely undergo arthroscopy (a surgical inspection of the knee joint) or other medical procedures related to these reactions.

Other side effects seen with Synvisc or Synvisc-One are: rashes, hives, itching, muscle pain/cramps, flushing and/or swelling of your face, fast heartbeat, nausea (or feeling sick to your stomach), dizziness, fever, chills, headache, difficulty breathing, swelling in your arms and/or legs, prickly feeling of your skin, and in rare cases a low number of platelets in the blood (platelets are a type of blood cell that are needed to help your blood clot when you are cut or injured). Rare cases of knee joint infection have been reported. If any of the above side effects or symptoms appear after you are given Synvisc-One, or if you have any other problems, you should call your doctor.

What are the benefits of getting a Synvisc-One® injection?

As shown in a medical study of 253 patients with osteoarthritis (OA) of the knee, where approximately half received either a single injection of Synvisc-One or an injection of the same volume of salt water (a "Saline Control" injection), the major benefits of Synvisc-One are pain relief and improvement in other symptoms related to OA of the knee.

What do I need to do after I get a Synvisc-One® injection?

It is recommended you avoid strenuous activities (for example, high-impact sports such as tennis or jogging) or prolonged weight-bearing activities for approximately 48 hours following the injection. You should consult your doctor regarding the appropriate time to resume such activities.

What other treatments are available for OA?

If you have OA, there are other things you can do besides getting Synvisc-One. These include:

Non-drug treatments

- Avoiding activities that cause knee pain
- Exercise or physical therapy
- Weight loss
- Removal of excess fluid from your knee

Drug therapy

- Pain relievers such as acetaminophen and narcotics
- Drugs that reduce inflammation (signs of inflammation are swelling, pain or redness), such as aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs, for example ibuprofen and naproxen)
- Steroids that are injected directly into your knee

When should I call my doctor? (Troubleshooting)

If any of the side effects or symptoms described above appear after you are given Synvisc-One, or if you have any other problems, you should call your doctor.

What did the clinical studies show?

A study was conducted in 6 countries outside the United States with 21 physicians. The patients in the study had mild to moderate knee OA, moderate to severe pain, and did not have sufficient relief of their pain and symptoms with medications taken by mouth.

A total of 253 patients in the study were assigned by chance to receive either a single injection of Synvisc-One (n=123 patients), or an injection of the same volume of salt water (a "Saline Control" injection) (n=130 patients). Neither the patients nor the doctors evaluating them knew which treatment they received. Any fluid that was present in the patient's knee was removed before the injection. The patients were seen by their doctor at standard times over 6 months. Information was collected about how much pain they were experiencing doing various types of activities, how much they were limited in their daily activities by their OA, and on their overall condition. Their doctor also provided an overall rating of their OA.

The main measure of the study was how much pain the subjects had doing five common types of activities over the 6 months duration of the study. Daily activity limitations and overall evaluations were also compared between the group of patients receiving Synvisc-One injection and the group receiving salt water injection. The study showed that patients receiving Synvisc-One had significantly less pain over 6 months, and felt significantly better than the patients who received the salt water injections. The difference in pain score reduction from baseline to 6 months between the Synvisc-One and salt water control injection was 0.15 out of a 5 point scale for the measurement of OA pain in the knee.

What adverse events were observed in the clinical study?

The following are the most common adverse events that occurred during the clinical trial of Synvisc-One:

- Pain in the knee or at the injection site
- Stiffness, swelling or warmth in or around the knee
- Changes in the way that you walk (e.g., limping)

Severe adverse events were not observed in the Synvisc-One trial. Joint infections did not occur in the injected knee in the Synvisc-One clinical trial. The most commonly occurring adverse events outside of the injected knee were headache, back pain, sore throat and the flu. One patient had a single episode of feeling faint.

How do I get more information about the Synvisc-One® product? (User Assistance)

If you have any questions or would like to find out more about Synvisc-One, you may call Genzyme Biosurgery at 1-888-3-SYNVISC (1-888-379-6847) or visit www.synvisc.com.

Manufactured and Distributed by:

Genzyme Biosurgery
A division of Genzyme Corporation
1125 Pleasant View Terrace
Ridgefield, New Jersey 07657

Synvisc-One, SYNVISC and GENZYME are registered trademarks of Genzyme Corporation.

70240104 Revised January 5, 2010

SONE-00058.C/3/2010