



nSTRIDE[®] Autologous Protein Solution System

Post-Treatment Guidelines

*Not an actual patient.



This Autologous Anti-Inflammatory treatment may help you get back to doing the things you love to do!

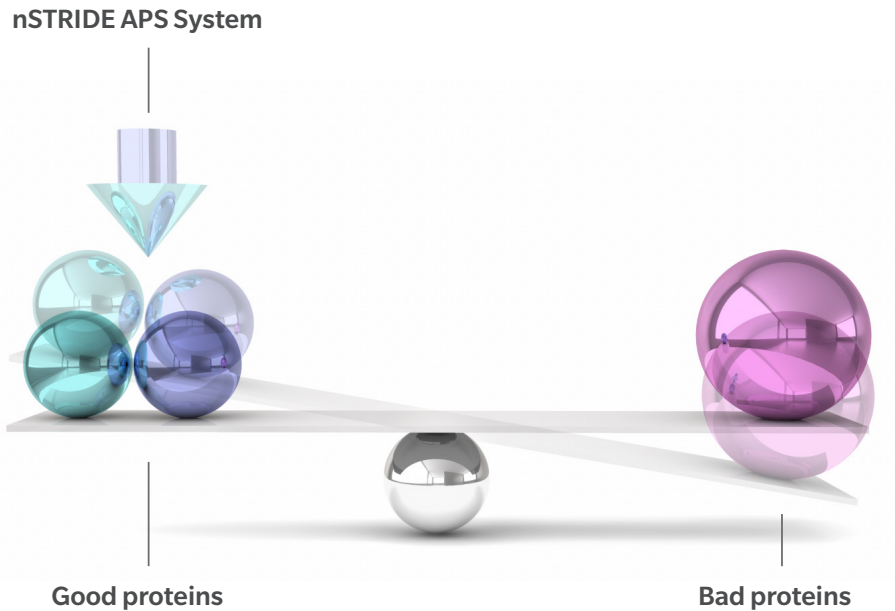
*Not an actual patient.

You could be on your way to improving your knee joint health with nSTRIDE APS treatment!

The nSTRIDE APS treatment you received is designed to alleviate pain and bring balance back to your inflamed knee joint by introducing high levels of “good” proteins concentrated from your own blood. These good proteins can block the “bad” proteins responsible for the inflammatory condition in your joint. At the same time, the nSTRIDE APS System also concentrates growth factors which are beneficial for cartilage health.¹⁰

nSTRIDE APS treatment can reduce pain in the knee joint, improve joint function and may slow the destruction of cartilage.^{16,9^}

Bringing balance back to your knee joint



Post Treatment Guidance

What can you expect?

Day of Injection

Following the injection you may experience some side effects e.g., generalized swelling in the joint, bruising, local pain associated with the blood draw, or knee injection. For more complete product information on indications, contraindications, warnings, precautions, potential adverse effects and patient counselling information, see the package insert or contact your local representative; visit www.zimmerbiomet.com.

Immediate Post-Treatment Period

First 4-5 days you may experience pain in the injection site or in the knee or both. For pain management, analgesics such as paracetamol can be taken.



Contact your doctor:

If you experience swelling with redness and warmth in the joint or at the injection site.



What can you expect?



Pain situation



Day of injection



Immediate Post-Treatment Period (4-5 days)

Soreness around the injection - rest your knee

Knee may be slightly more sore

Post-Treatment Period

There is no cure for Osteoarthritis (OA).¹⁵ But successful treatment with the nSTRIDE APS System can reduce or relieve your pain, which may increase your mobility and comfort.^{11, 16, 18} nSTRIDE APS treatment may decrease or eliminate pain, reduce stiffness and help restore mobility and flexibility.^{11, 16, 18} In general, it is recommended that you minimize your activity level for 14 days and not exceed pre-injection levels. At a minimum, activities, including walking, should be limited for the first 4-5 days or this could result in irritation and swelling of the joint. Training and sports should be avoided for at least for 4-5 days following treatment and ideally, throughout the entire post-treatment period (14 days). This is particularly important if you normally participate in high-intensity or long-distance sports or training.



Contact your doctor:

If at any time you experience pain that is different from the pain that you had prior to the injection.

Pain Reduction Period

Following the Immediate Post-Treatment Period (4-5 days) you can expect a small reduction in swelling, stiffness and pain. Pain relief may be expected after one to two weeks,^{11, 16, 18} but for many patients, substantial pain relief normally occurs between 2-4 weeks after treatment. A significant reduction in pain may take up to 8-12 weeks to appear and can occur suddenly or gradually.



Contact your doctor:

If you do not have pain relief after 8 weeks.



Post-Treatment Period
(6-14 days)

May not notice much improvement during this time



Pain Reduction Period
(4-8 weeks)

Knee joint should respond and you should notice an improvement





*Not an actual patient.

Living with Osteoarthritis

Osteoarthritis negatively impacts quality of life through pain and limited mobility, reducing the ability to work and diminishing self-esteem.⁴⁻⁵

To optimize the reduction in pain reduction so you can go back to doing the things you love to do, the nSTRIDE APS treatment should be used together with a specific and comprehensive rehabilitation and training program for knee osteoarthritis. Studies have shown significant improvements in pain and quality of life when OA patients follow a training program.^{11, 16, 18}

Early Interventions

Low-impact exercise

Regular low-impact exercise, including joint and muscle exercises, can improve strength and flexibility. A common myth is that exercise will “wear out” joints, however, when done properly, low-impact exercise, such as walking or jogging, may actually reduce pain and fatigue and increase movement.

Weight management

Weight loss helps to ease pain by reducing the amount of stress on your joints. After all, your knees bear the full load of your weight plus everything you carry. According to the Arthritis Foundation, every pound of excess weight applies about four pounds of extra pressure to your knees.²

Physical and occupational therapy

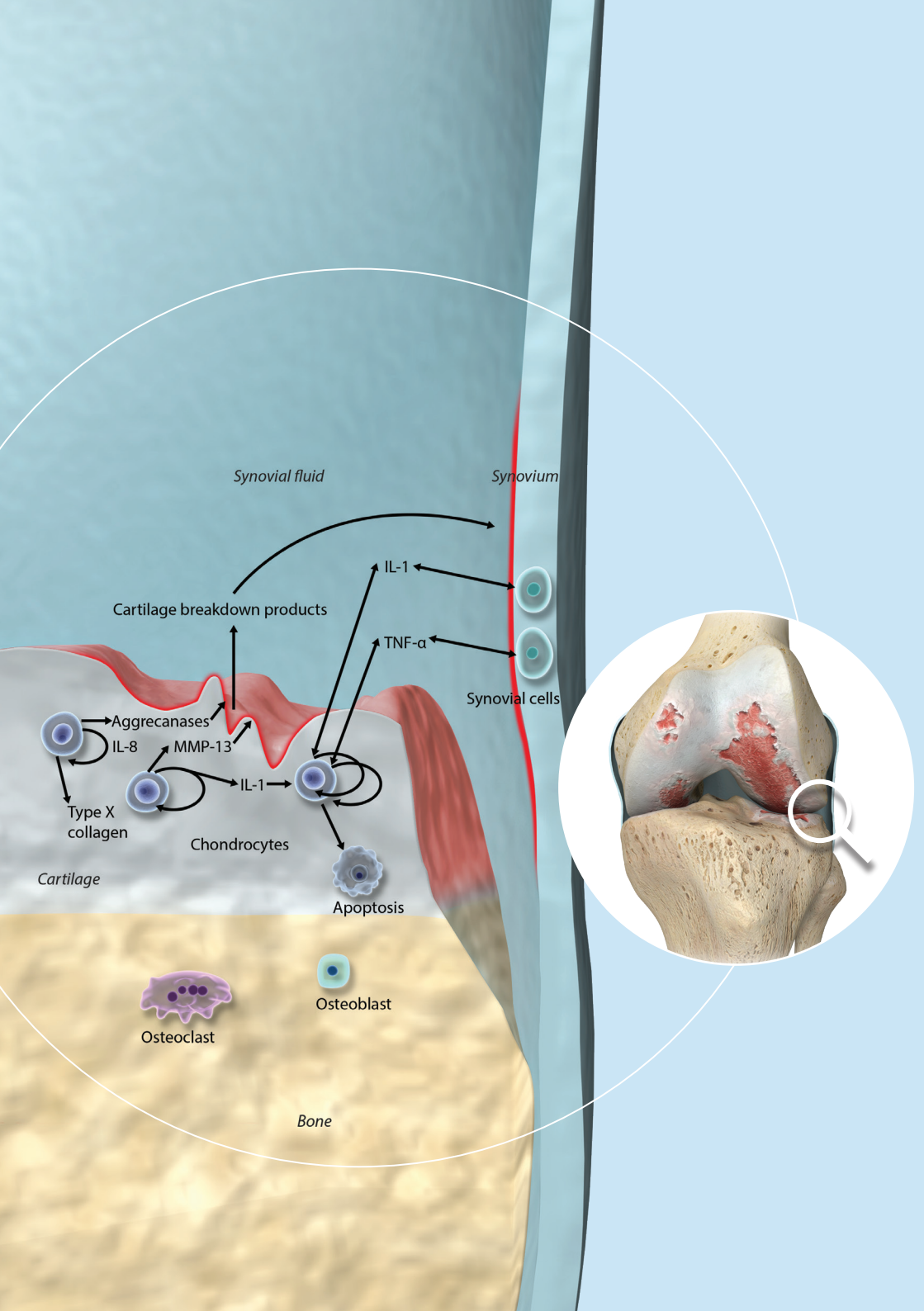
Physical therapists can work with you to create a personalized exercise program and show you how to use therapeutic heat and massages to potentially reduce pain. In addition, occupational therapists can introduce you to beneficial devices, such as those used to elevate chair or toilet-seat height.

Assistive devices

You can protect your knees by using a cane or other walking aid to keep from putting excess stress on them. Shoe inserts called orthotics are designed to support, align and improve the function of your foot. In turn, they may lessen the pressure on your knees.

Bracing

Different types of braces may help reduce knee pain and improve function and mobility. A “support” brace supports the entire load on your knee, and an “unloader” supports the weight on only one side of the knee, when only one side of the knee is damaged.



Science Behind nSTRIDE APS System

In an osteoarthritic knee, inflammatory cytokines (“bad” proteins) outnumber anti-inflammatory cytokines (“good” proteins) causing an imbalance resulting in knee pain and cartilage degeneration.¹²

The inflammatory proteins IL-1 and TNF-a attack the cartilage.¹² These “bad” proteins must be stopped simultaneously to decrease pain and slow cartilage degeneration.¹²

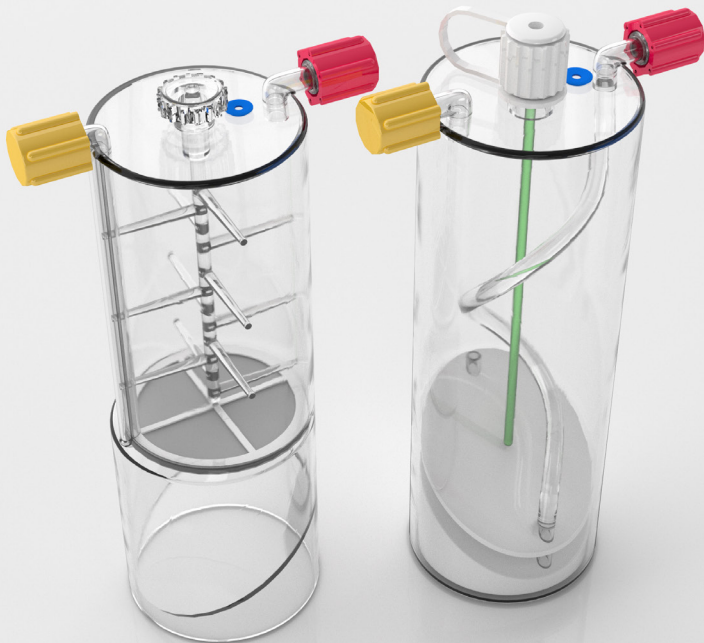
The nSTRIDE APS System introduces high levels of “good” proteins that can block the inflammatory cytokines (bad proteins).^{13 ^}

Laboratory and animal studies have shown that nSTRIDE APS System has slowed cartilage degeneration, unlike some traditional therapies. Human studies have also shown that the nSTRIDE APS System has decreased pain.^{8,9, 11, 13, 16, 17, 18 * ^}

While balance is being restored to the knee, anabolic (building) growth factors (IGF-1 and TGF-1) are also introduced for beneficial cartilage health.⁹

Therefore, nSTRIDE APS System is a novel therapy that can reduce pain in the knee joint and improve joint function. nSTRIDE may also slow the destruction of cartilage.^{16, 17, 18 * ^}

The nSTRIDE APS System is provided asw a single treatment in the doctor’s office.



Significantly reduces
pain associated
with knee OA up to
3 years from a single
treatment. ^{16, 17, **}

How long can I expect the benefits to last?

Clinical studies have demonstrated that the effectiveness of one treatment can last up to 24-36 months.^{16, 17, **}



*Not an actual patient.

References

1. "Knee Pain: MedlinePlus Medical Encyclopedia." U.S National Library of Medicine. U.S. National Library of Medicine, n.d. Web. 11 Aug. 2014. <http://www.nlm.nih.gov/medlineplus/ency/article/003187.htm>.
 2. "Research Joint Replacement / Knee Pain Knee Pain Overview." Knee Surgery, Partial/Total Knee Joint Replacements. Biomet, n.d. Web. 11 Aug. 2014. <http://www.biomet.com/patients/knee_overview.cfm>.
 3. Nordqvist, Christian. "What Is Arthritis? What Causes Arthritis?" Medical News Today. MedLexicon International, 16 May 2014. Web. 07 Aug. 2014. <<http://www.medicalnewstoday.com/articles/7621.php>>.
 4. "Osteoarthritis in General Practice: Data and Perspectives." Arthritis Research UK | Arthritis Research UK. Arthritis Research UK | Arthritis Research UK, 19 July 2013. Web. 08 Feb. 2015. <<http://www.arthritisresearchuk.org/policy-and-public-affairs/reports-and-resources/reports.aspx>>.
 5. "Arthritis of the Knee-OrthoInfo - AAOS." Arthritis of the Knee-OrthoInfo - AAOS. American Academy of Orthopaedic Surgeons, n.d. Web. 08 Aug. 2014. <<http://orthoinfo.aaos.org/topic.cfm?topic=A00212>>.
 6. Krueger, Pat. "Stages of Osteoarthritis." EHow. Demand Media, 04 Sept. 2009. Web. 04 Dec. 2014.
 7. "Stages of Osteoarthritis: What Everyone Should Know About the Three Stages." Health Guide Info. N.p., 24 Mar. 2011. Web. 04 Dec. 2014.
 8. Bertone AL, Ishihara A, Zekas LJ, Wellman ML, Lewis KB, Schwarze RA, Barnaba AR, Schmall ML, Kanter PM, Genovese RL. "Evaluation of a single intra-articular injection of autologous protein solution for treatment of osteoarthritis in horses." *Am J Vet Res* 2014;75(2):141-151.
 9. Matuska A, O'Shaughnessey K, King W, Woodell-May J, "Autologous solution protects bovine cartilage explants from IL-1 α and TNF α -induced cartilage degradation." *Journal of Orthopaedic Research*, 2013;31(12):1929-35.
 10. O'Shaughnessey K., Matuska A., Hoepfner J., Farr J., Klaassen M., Kaeding C., Lattermann C., King W., Woodell-May J., "An Autologous Protein Solution prepared from the blood of osteoarthritic patients contains an enhanced profile of anti-inflammatory cytokines and anabolic growth factors." *Journal of Orthopaedic Research*, 2014, 32(10):1349-55.
 11. van Drumpt, AM, van der Weegen W, King W, Toler K, Macenski MM, "Safety and Treatment Effectiveness of a Single Autologous Protein Solution Injection in Patients with Knee Osteoarthritis," *BioResearch Open Access*, Volume 5.1, p. 261 – 268, 2016.
 12. Goldring S.R., Goldring M.B. "The role of cytokines in cartilage matrix degeneration in osteoarthritis." *Clinical Orthopaedics and Related Research*, 2004, 427S:527-536.
 13. Woodell-May J, Matuska A, Oyster M, et al. Autologous protein solution inhibits MMP-13 production by IL-1beta and TNF alpha-stimulated human articular chondrocytes. *J Orthop Res* 2011 Sep 15;29(9):1320-6.
 14. King WJ, van der Weegen W, van Drumpt R, Soons H, Toler KO, Woodell-May JE, "WBC Concentration Correlates with Increased IL-1ra and Changes in WOMAC Pain Scores in a Safety Study of Autologous Protein Solution." *International Cartilage Repair Society #6872*, May 8-11, 2015, Chicago, IL.
 15. "Osteoarthritis." : Symptoms & Treatment. Arthritis Foundation, n.d. Web. 20 Apr. 2015. <<http://www.arthritis.org/arthritis-facts/disease-center/osteoarthritis.php>>.
 16. Kon E, Engebretsen L, Verdonk P, Neher S, Filardo G. "Clinical Outcomes of Knee Osteoarthritis Treated With an Autologous Protein Solution Injection: A 1-Year Pilot Double-Blinded Randomized Controlled Trial" *American Journal of Sports Medicine*. 46(1):171-180, Jan. 2018.
 17. A Multicenter, Double-Blind, Randomized, Placebo [Saline]-Controlled Pilot Study of a Single, Intra-Articular Injection of Autologous Protein Solution in Patients with Osteoarthritis of the Knee" *Clinical Investigation Report – 36 Month*, APS3-33-00, Version 1.0. 14 January 2019
 18. Hix J, Klaassen M, Foreman R, Cullen E, Toler K, King W, Woodell-May J, "An Autologous Anti-Inflammatory Protein Solution Yielded a Favorable Safety Profile and Significant Pain Relief in an Open-Label Pilot Study of Patients with Osteoarthritis," *BioResearch Open Access*,6(1):151-158. 2017.
- * Animal studies are not necessarily indicative of clinical performance.
^ Laboratory testing is not necessarily indicative of clinical outcomes.
** As measured by WOMAC pain scores reported by patients continuing follow-up through 3 years (n=19)
19 out of the original cohort of 31 patients.

All content herein is protected by copyright, trademarks and other intellectual property rights, as applicable, owned by or licensed to Zimmer Biomet or its affiliates unless otherwise indicated, and must not be redistributed, duplicated or disclosed, in whole or in part, without the express written consent of Zimmer Biomet.

This brochure describes the combined post-treatment recommendations from Dr. Erik Rosenlund and Mr Vikas Vedi associated with the nSTRIDE APS treatment. Results will vary due to health, weight, activity and other variables. Not all patients are candidates for this product and/or procedure. Only a medical professional can determine the treatment appropriate for your specific condition. Appropriate post-treatment activities will differ from patient to patient.

Zimmer Biomet does not practice medicine and does not recommend any particular treatment and is not responsible for its use on a specific patient. The health care practitioner who performs this treatment is responsible for determining and using the appropriate techniques for each individual patient. Check for country product clearances and reference product specific instructions for use. Not for distribution in France. ©2020 Zimmer Biomet

This material is intended for health care professionals. Distribution to any other recipient is prohibited. For indications, contraindications, warnings, precautions, potential adverse effects and patient counselling information, see the package insert or contact your local representative; visit www.zimmerbiomet.com for additional product information.



ZIMMER BIOMET
Your progress. Our promise.

2766.1-CA-en-REV0280



Legal Manufacturer:
Biomet Biologics
56 E. Bell Drive
Warsaw, Indiana 46581
USA
www.zimmerbiomet.com

2797