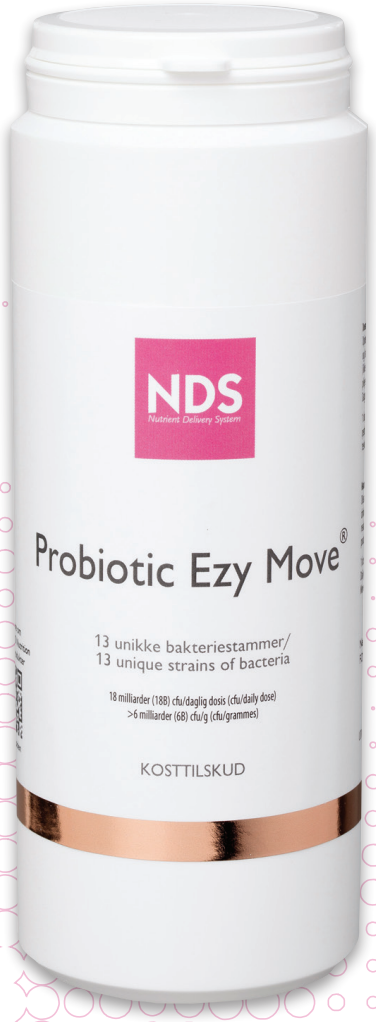
NDS
Nutrient Delivery System

EZY Move®

Do you suffer from joint pain and stiffness?

By Nutritional therapist Marianne Fjordgård, DET

If you suffer from painful, swollen, tender and stiff joints that may feel as though they contain gravel, then perhaps you have osteoarthritis. Here, the inflammation gradually leads to the cartilage tissue in the joint breaking down. The joint cartilage contains approximately 70% collagen. Studies investigating the intake of specific collagen peptides significantly support the use of collagen for maintenance and regeneration of joint cartilage. The intake of certain probiotic bacteria can reduce the inflammation that is causing the degeneration.



What is osteoarthritis? (Also known as degenerative joint disease, arthrosis and age-related arthritis)

The term, arthritis, covers more than 200 different diseases. Osteoarthritis, also called arthrosis, is the most frequent form of arthritis, which primarily occurs in the knees and hips, but it can also occur in other hinged joints, e.g. in the shoulders, elbows, ankles, foot and finger joints. Osteoarthritis is a disease where cartilage and tissue surrounding the joints is slowly broken down.

In 2013, more than 300,000 Danes over the age 18 were diagnosed with osteoarthritis. Some live their lives without suffering any significant problems caused by their osteoarthritis, however, approximately 150,000 people are severely troubled by pain, have trouble walking more than 400 metres without stopping, cannot walk up or down stairs, have poor sleep quality, take many sick days, and have a reduced quality of life. These statistics do not include patients who have solely had contact with their GP. Thus, there are many more Danes who suffer from the consequences of osteoarthritis. It is believed that up to 900,000 Danes are struck by osteoarthritis. 20% of the chronic pain reported worldwide stems from osteoarthritis.

With osteoarthritis, pain originates from the bone membranes and tendons. Osteoarthritis is primarily found in the elderly, but the disease can also strike in younger people. Risk factors are obesity, physically demanding work, and one-sided repetitive movements. Studies published in 2016 show there is also a genetic risk of developing osteoarthritis in the hips. The established methods of treatment are comprised of anti-inflammatory medication, which becomes problematic in the long-term due to adverse effects.

Other treatments include local steroid injections or hyaluronic acid, weight loss, surgery and exercise, such as in a heated swimming pool. This is why other methods are needed, for example by giving all these people a diet and dietary supplements.

Risikofaktorer:

Cartilage tissue

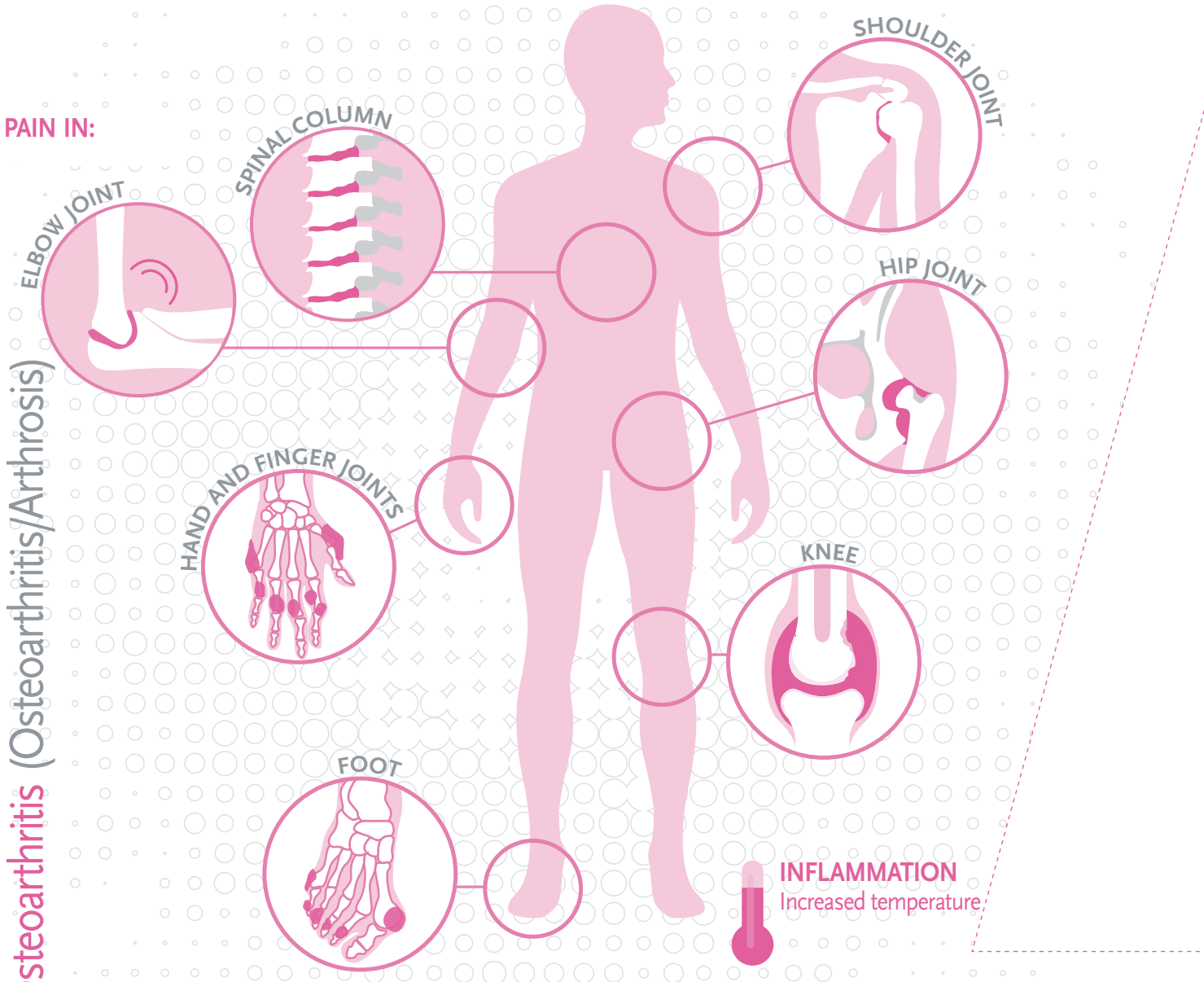
Hyaline cartilage is found on joint surfaces in the synovial joints with joint cavities and acetabula. Cartilage tissue contains no blood vessels or nerves. The tissue receives its nourishment from the surrounding synovial fluid, and from the blood vessels on the bone ends. The cells in the cartilage are called chondrocytes, and the substance between these cells is firm, elastic and is comprised of mucous from the chondrocytes and some elastic collagen threads. The cartilage tissue acts as a support pillow to protect one joint from rubbing against the other. We also have cartilage tissue in other places on the body, including the nose, in the ears and between the vertebrae.

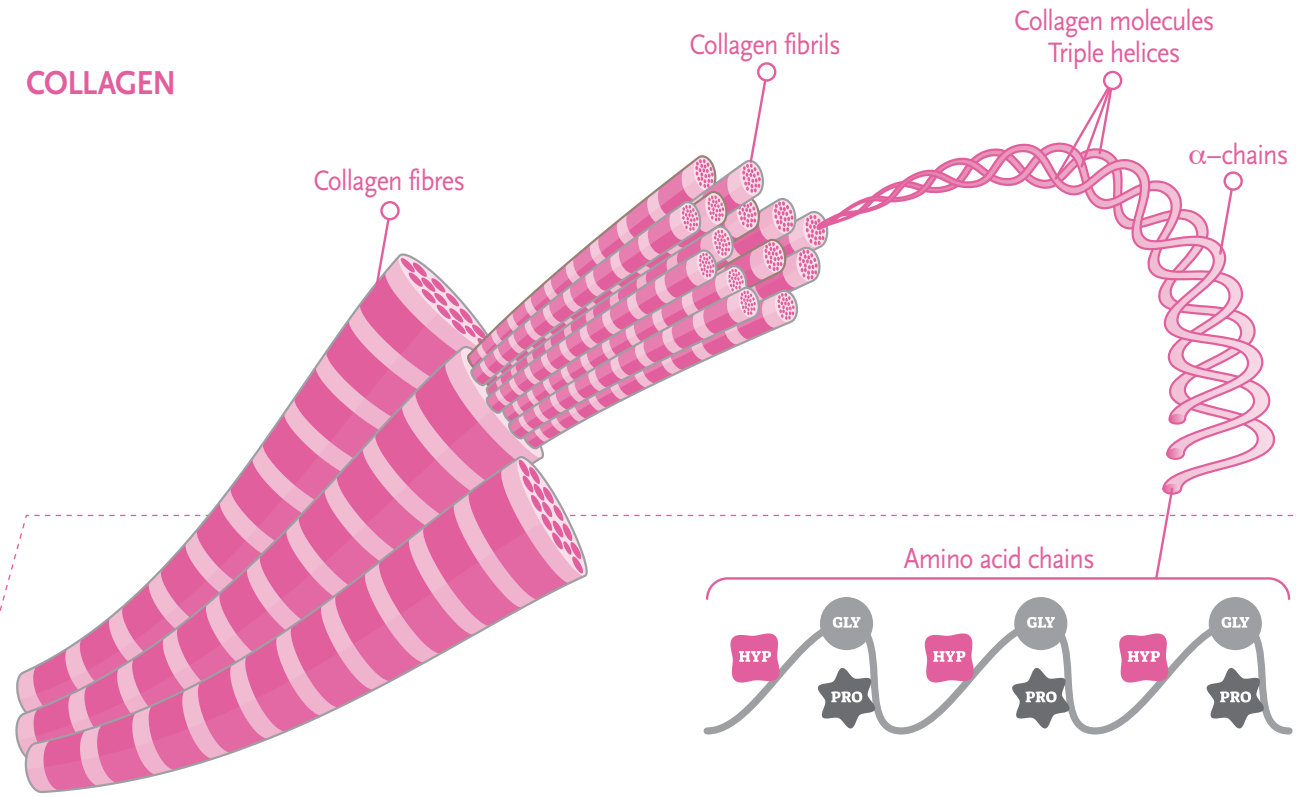
Collagen for cartilage

30% of the proteins in the body are embedded in collagen, which is found as a binding agent in our connective tissue and supporting tissues in the skin, cartilage, tendons, muscles, bones, blood vessels and gastrointestinal tract. The joint cartilage contains approximately 70% collagen. Studies investigating the intake of specific type II collagen peptides, such as those in NDS® Probiotic EZY Move®, highly support the use of collagen for maintenance and regeneration of joint cartilage.

Collagen peptides are broken down pieces of protein chains and amino acid chains. This breaking down takes place through a specially developed enzymatic breakdown of proteins. This process is called hydrolysis. Collagen peptides contains chains from 2 amino acids and up to 100 amino acids in different variations.

In collagen, approximately 1/3 of amino acids glycine combined with other amino acids, such as proline, hydroxyproline, arginine, and lysine but there can also be other amino acids, and the chains are described as Gly-X-Y. Different connective and supporting tissues are comprised of an individual composition of amino acids, and the cartilage primarily consists of type II collagens. Collagen is long chains of polypeptides comprised of up to 1050 amino acids from broken down and cleaved proteins. Several, most often 3, of these long chains wrap around each other as braided ropes, thus creating structure and flexibility in our connective tissue.





STUDIES on this special BioActive type II collagen peptide

Over 20 studies have been carried out on some 3,000 persons with joint and bone problems, who took the specific BioActive type II collagen peptides used as raw materials in NDS® Probiotic EZY Move®.

These many and large-scale studies indicate the following effects:

- Reduces the progressive loss of cartilage
- Boosts joint health in a natural physiological manner
- Stimulates the formation of type II collagen peptides
- Stimulates the synthesis of hyaline cartilage tissue
- Provides better mobility and movement
- Maintains and incorporated into the cartilage
- Reduces pain, also after sports and exercise
- Supports the formation of new cartilage mass
- Reduces inflammation in the joint cavity and the socket
- Keeps people mobile and active longer, and thereby increases the quality of life

Better mobility and less pain

147 athletes with an average age of 20 years, and who had joint pain, participated in this study. They were divided into two groups that were to either take his specific BioActive type II collagen, or a placebo, for 24 weeks The severity of the pain was provided both by the participants and by their doctor. It was a prospective, randomised, double-blind, placebo controlled study, and it showed a statistically significant different perception of pain between the treatment group and the placebo group. The most optimal effect was seen in the treatment group.

Regeneration of lost cartilage and less inflammation

Another study included 30 participants with osteoarthritis in the knees. The study subjects who received a supplement containing 10 grams of this specific BioActive type II collagen peptide or placebo for 48 weeks, showed beneficial long-term effects from intake. MRI (magnetic resonance imaging) scans were taken over the course of these 48 days. One MRI at the start, one after 24 weeks, and one after 48 weeks. At week 24 and week 48 more cartilage was detected in the knee joints and there was less inflammation. This study, which was a prospective, randomised, double-blind, placebo controlled study, showed regeneration of lost cartilage and less inflammation in the knees after the supplement.

Less knee pain, less stiffness and reduced mobility

160 young athletes with knee pain due to sports injuries received a supplement of 5g of this specific BioActive type II collagen peptide, which is used as raw material in NDS® Probiotic EZY Move® or a placebo. After 3, 6 and 12 weeks, pain, stiffness and physical function of the affected joints were recorded. This study, which was a prospective, randomised, double-blind, placebo controlled study, already showed clear and, statistically, there was significantly reduced pain and stiffness, increased mobility and improved physical function in the affected joints after 3 weeks. This effect was maintained both after 6 and 12 weeks. The need for massage and physiotherapy was reduced. 40% of participants in the treatment group experienced less pain and 70% of the participants in this study experienced a positive effect.

Inflammation

It is inflammatory processes that speed up the breakdown of the cartilage that should protect our joints against degradation and pain. The environment we have in our intestines, with microbiotic organisms that are both good and bad, plus foodstuffs that are either better or worse, are the most likely factors that can trigger our immune defence to create inflammation. In this case, this inflammation will break down our cartilage. The inflammation can be compared with a fire on a cellular and molecular level. Unfortunately, many of our tissues are easily combustible. An out of control fire that causes scorched or charred tissue. A burned letter is unreadable, and destroyed neurotransmitters do not work. The fire is ignited by leukocytes in the body's immune defence, which produce sparks that ignite our tissue under the influence of prostaglandins or microorganisms, etc. There are many neurotransmitters in the inflammatory cascade that incite inflammation. This could, for example, be series 2 prostaglandins from our intake of saturated fat with arachidonic acid, free radicals O2, NfkB (nuclear factor-kappa-light-chain-enhancer of activated B cells), which are a neurotransmitter within cells that produces and releases TNF-a (tumour necrosis factor alfa). This is a cell signalling protein produced inside the cell as a result of NfkB, IL-1 and IL-6 (cytokines that are communication molecules between the immune system's cells). These signalling substances circulate in the blood and cause organs, tissues and cells to produce CRP (C-reactive protein), which activates leukocytes that produce inflammation.

Special bacterias can cause inflammation

It is a widespread perception that some undesired intestinal bacterias can induce and maintain an inflammation in humans that are genetically receptive due to defective immunoregulatory mechanisms. The normal composition of microorganisms in the enteric nervous system within the wall of the gastrointestinal tract are altered on several points in connection with the inflammatory disease and inflammatory degeneration of tissue, such as joint cartilage. Food and intestinal bacteria can, both for better and for worse, alter the immune response from well-regulated to an inflammatory allergic or autoimmune condition.

A changed balance with fewer beneficial bacteria in relation to undesirable dysbiotic or disease causing pathogenic microorganisms can lead to a pro-inflammatory environment in the abdominal cavity, which can trigger chronic intestinal inflammation, not only in the intestine, but in the entire body of a receptive person. Fewer beneficial lactobacilli and an increased number of undesirable coliform bacteria and bacteroides, and this composition is believed to be responsible for inducing inflammation, and the subsequent increased immune response that, for example, can break down the protective cartilage in the joints.

The dysbiosis results in:

- Damage to the intestinal mucosa and degradation of the proteins that maintain an intestinal tight junction. Many microbial pathogens with lipopolysaccharides (LPS) must adhere to the intestinal mucosa before they can cause diseases. This is done by forming enzymes that degrade the tight junctions found between the intestinal epithelial cells.
- Uptake of unwanted food antigens through a leaky and porous intestine, causes hypersensitivity reactions and inflammation, because the immune defence reacts to these antigens.
- Uptake of harmful living or dead microbes (bacterias, fungi, viruses or parasites), which may possibly be pathogenic.
- Production of harmful enzymes, which produce poisons or carcinogenic toxins from the fats and proteins contained in the diet.
- Overloading our capacity for detoxification such as the lymph system, kidneys, and liver.
- An disturbed balance between different minerals. Often causes zinc, magnesium and vitamin B deficiencies.
- Poor hormone regulation and increased hormonal impact that may possibly lead to hormone sensitive types of cancer.
- Changes to signal substances and neurotransmitters, e.g. changes tryptophan metabolism, which is important to our sleep and humour regulation, for carcinogenic phenols.

Dysbiosis may lead to many modern day symptoms and diseases:

- Problems with the digestive system, for example, irritable bowel syndrome (IBS), irritable large intestine, constipation, diarrhoea, bloating, stomach pain, etc.
- Muscle and joint problems or arthritis-like diseases
- Lactose intolerance, which causes diarrhoea, is primarily due to being deficient in lactase (beta-galactosidase) from Lactobacilli.
- Food hypersensitivity or allergies.
- Inflammation and inflammatory disease
- Cancer, including breast cancer, prostate cancer, gut or liver cancer.
- Osteoporosis – brittle and fragile bones
- Immune balances – both impaired or elevated immune response
- Tiredness, headache, migraine and memory problems
- Behavioural problems and learning difficulties

- Build-up of toxins, impaired liver function and symptoms of toxicity
- Nutritional deficiencies due to poor uptake
- Skin problems, such as eczema, acne or psoriasis
- Strain on or diseased pancreas
- Blood poisoning (Sepsis).

Obesity and elevated blood sugar

Studies on mice have shown that obesity alone does not put too much strain on the joints, which results in osteoarthritis (in mice). It is the composition of bacteria in the intestinal system that cause inflammation and this breakdown of joint cartilage. In the study, half of the mice were fed with fatty and sugary foods, and the other half of the mice received a green diet that was rich in fibre. The group of mice that were fed with fatty and sugary foods became obese and diabetic, and the bacteria composition in the gut became more dysbiotic. This group of mice had osteoarthritis more frequently than the group of mice that were fed a vegetable diet that was rich in fibre. These mice remained at a normal weight and had a completely different composition of intestinal bacteria.

Through diet, lifestyle and dietary supplements, we can keep our microbiome in tip-top shape!

NDS® Probiotic line:

Approximately 80% of the immune defense and the antibody producing cells are found in the intestinal mucosa, and on the single cell layer of the intestinal epithelium. Certain probiotic bacterias strengthen the mucosa, closing the gaps in the spaces between the intestinal cells, strengthening the immune defence, and affecting the immune defense so it reacts in a less inflammatory, allergic or autoimmune way.

Research is continuously being carried out with regards to probiotic bacteria, and naturally, the NDS® Probiotic line keeps up with this research, and always chooses the best and most effective bacteria for the product line. Many probiotic products currently found on the market only specify what family, e.g. bifidobacterium, and what species, such as lactococcus lactis, are selected for the product. When conducting modern research and writing about probiotics, the name of the strain, such as XD/011, must also be included. Many of the different strains originated from the same species, e.g. Lactobacillus rhamnosus, and there is a significant difference in the effect the different strains. NDS® Probiotic EZY Move® contains 13 bacteria strains with the greatest anti-inflammatory properties selected. These probiotic bacteria can also fight unwanted dysbiotic microorganisms, which would otherwise result in an inflammatory process.

These 13 individual bacteria strains are specially selected for the ability to:

- Inhibit harmful bacteria (gram-negative with lipoprotein signal peptidase (LPS)), which provide a systemic inflammatory response, and thus cell degradation, such as the process that breaks down joint cartilage.
- To strengthen and improve the intestinal barrier function
- To form anti-inflammatory cytokines

Lactobacillus rhamnosus XD/011

has been selected from among 200 different strains, because of its ability to survive stomach acid and bile, its good ability to attach to the intestinal mucosa, and for its immune system stimulating ability, without increasing the risk of inflammatory or autoimmune diseases. This strain increases our immune protection against infections, and it reduces damage from E.coli and Salmonella typhimurium.

Lactobacillus acidophilus XD/015

is investigated and studied on 125 in vitro, 47 in animal tests, and in 54 studies on humans, and is therefore regarded as one of the most well studied and safe strains of probiotics. Other studies have shown that Lactobacillus acidophilus XD/015 decreases and prevents growth of unwanted microorganisms, including Salmonella typhimurium, Clostridium perfringens, E. coli, Staphylococcus aureus, Enterococcus faecalis and Clostridium histolyticum. These dysbiotic bacteria can set off an inflammatory process.

NDS® Probiotics are a symbiotic supplement, as they contains both probiotics, prebiotics, minerals and enzymes. We can compare the probiotic strains with seeds sown in the earth, and prebiotics and minerals as the fertiliser that will go make the soil rich in nutrition so the seeds can grow up to be viable sprouts and plants.

What is not tolerated must be removed, and what is deficient must be added for inflammation!

What should be removed in the event of inflammation?

Poor diet, reduced intake of Omega-3 fatty acids, and increased intake of poor fatty substances, in addition to refined carbohydrates, obesity, little exercise, insulin resistance, undesirable foods, such as milk and gluten, gram negative (unwanted) bacterias containing LSP (lipo-poly-saccharides), and any heavy metals must also be removed.

What should be added for inflammation?

- See *"Good advice for healthy intestines"* below
- Probiotic strains that reduce inflammation, such as those, selected for use in NDS® Probiotic EZY Move®
- Omega-3 fatty acids
- Vitamin C and citrus flavonoids
- Vitamins A, D, and E
- Ginger and turmeric
- Green and black tea
- N-acetylcysteine (NAC)
- Alfa lipoic acid
- Cat's claw extract (Uncaria spp.)
- Silymarin from milk thistle
- Resveratrol from red grape skins
- Gincolides from Ginkgo Biloba
- Boswellic acid from Boswellia serrata.

Avoid the following factors:

- **Refined foods,** such as sugar, white bread without nourishment and fibre, excessive intake of coffee and alcohol
- **Intake of artificial sweeteners, genetically modified foodstuffs and tinned foods**
- **Saturated fats and red meat** in excessively large quantities
- **Unnecessary intake of antibiotics** and anti-inflammatory medications
- **Excessive exercise,** such as extreme sports
- **Stress,** as the long-term stress hormone cortisol changes the intestinal microbiome
- **Working shifts and jet lag** they also interfere with your intestinal microorganisms
- **Smoking.** This is something there are many good reasons for, but also because it negatively affects the intestinal microenvironment.

We are not what we eat, but what our microorganisms eat!

GOOD ADVICE FOR HEALTHY INTESTINES

- **Eat whole-grains, vegetables and foods rich in fibre.** GPreferably organic and locally produced foodstuffs, so you avoid pesticides, plus these foodstuffs also give you beneficial bacteria from the soil.
- **Get out and explore your natural surroundings** as much as possible, e.g. by working the soil in your garden. The Earth's microlife will affect you. Other options include trekking, walks in the forest and at the beach. This will mean you are subjected to different ecosystems.
- **Try fasting between 9 and 12 hours,** for example, by not eating after 21:00 in the evening and until 7:00 or 9:00. Some bacteria thrive in an intestinal environment with many calories, while other bacteria thrive in a calorie poor environment. A completely different bacteria composition can be seen in meat eaters, people who consume sugar and refined sorts of grain that is not found in plant eaters.
- **Ensure you get enough sleep.** Preferably, between 7 and 8 hours of undisturbed sleep every night.
- **Get enough exercise.** Exercise provides greater diversity of microorganisms. A brisk walk, jogging or yoga will make your microbiome grateful.
- **Try to maintain a regular daily rhythm.** Your microorganisms also have a daily rhythm that they thrive most optimally with.
- **People who have pets, have fewer allergies** and are less overweight. Your pet increases your microbiological diversity, and it also has a positive effect on your health.
- **Your home also has a microbiome.** Children who live in a home where dishes are washed in a dishwasher have more allergies than children who live in a home where dishes are washed by hand.
- **Hopefully you were born vaginally and were breastfed.** This allows you to receive microorganisms early in life that are important to digestion and immune defense. Being born by caesarian section and consuming breast milk substitutes will subject you to completely different microorganisms.

Your gut bacteria will thank you if you follow this advice!

NDS® Probiotic EZY Move® for healthy joints

The product is specially developed to strengthen cartilage and also healthy joints throughout the whole body. It contains both specific bioactive type II collagen peptides, probiotic bacteria that both inhibits unwanted microorganisms and inhibits inflammation, prebiotics, minerals and the enzyme amylase.

CONTENTS

Content in a 3 teaspoon dose
NDS® Probiotic EZY Move® = 8 g:
Collagen peptides (type II) 5 g
A total of 13 individually selected probiotic bacterias 3 g
Bifidobacterium bifidum
Bifidobacterium bifidum/Bifidobacterium lactis
Bifidobacterium infantis
Bifidobacterium lactis
Bifidobacterium longum
Lactobacillus acidophilus
Lactobacillus acidophilus XD/015
Lactobacillus casei
Lactobacillus paracasei
Lactobacillus plantarum
Lactobacillus rhamnosus XD/011
Lactobacillus salivarius
Lactococcus lactis

6 billion CFU/g and a total of 18 billion CFU/per daily dose of at a 3 teaspoon dose and 9 billion for the preventative dose, which is 1 1/2 teaspoons full.

FOS, inulin, corn starch, maltodextrin, mineral blend of magnesium, potassium and manganese, amylase, a carbohydrate-splitting enzyme and vanilla.

DAILY DOSE

For prevention of osteoarthritis:
1 1/2 teaspoons full NDS® Probiotic EZY Move®

For treating osteoarthritis:
3 teaspoons full (8 g) NDS® Probiotic EZY Move®.

Naturally, this does not replace treatment prescribed by a doctor.

Dissolve the powder in tepid water (not too cold or too warm) or any other non-acidic beverage.

The mixture should stand for at least 15 minutes before it is consumed on an empty stomach, e.g. in the morning or at bedtime.

The powder has a neutral flavour and is very soluble. This mixture is stable and tolerates being subjected to the acidic environment through the digestive tract, and is already released in the upper part of the small intestine, where we absorb roughly 85% of our nutrients.

The NDS® probiotic range includes these specific multi-strain products:

NDS® Probiotic Panda® 1 & 2 are used in the prevention and treatment of allergies in both children and adults. Also suitable for pregnant or breastfeeding women who are worried that their child may develop an allergy.

NDS® Probiotic Classic® for excess growth of unwanted bacteria, fungi or parasites in the gastrointestinal tract.

NDS® Probiotic I.L.D.® for use in inflammatory gastrointestinal diseases such as Crohn's Disease, Ulcerative colitis and other related diseases.

NDS® Probiolax® for constipation/sluggish bowel in people of all ages (children + 1 y old).

NDS® Probiotic Barrier® for the healing of the intestinal mucosa in many kinds of stress, hypersensitivities, mood disorders, depression.

NDS® Probiotic Performance® for balancing intestinal function in exercise- and sport-related stress/loose stools/diarrhoea, sensitivities with diarrhoea and e.g. medical treatments that provoke diarrhoea.

NDS® Probiotic S-60-Nrg® as a aid in cases of serious stress.

NDS® Probiotic W8-Control® as an aid to balancing the intestinal flora for enhanced metabolic energy and weight loss.

NDS® Probiotic A.A./D® for diarrhoea and other problems caused by treatment with antibiotics. Overgrowth of Clostridium difficile and Pseudomembranous colitis.

NDS® SkinActive® reduces the appearance of wrinkles, fine lines and cellulitis. Better skin. Improves protection of the skin against the sun's harmful rays.

NDS® Leaky-G® for inflammation, allergies or autoimmune disease caused by leaky gut, intestinal permeability and leaky intestine.

NDS® OsteoCare® – prevention of osteopaenia and osteoporosis, or for treatment of said bone diseases. For broken bones and predisposition to osteoporosis.

NDS® EZY Move® – prevention and treatment of pain, swelling, tenderness and joint stiffness, as well as osteoarthritis with articular cartilage degradation, and inflamed tissue.

It is all about biology

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