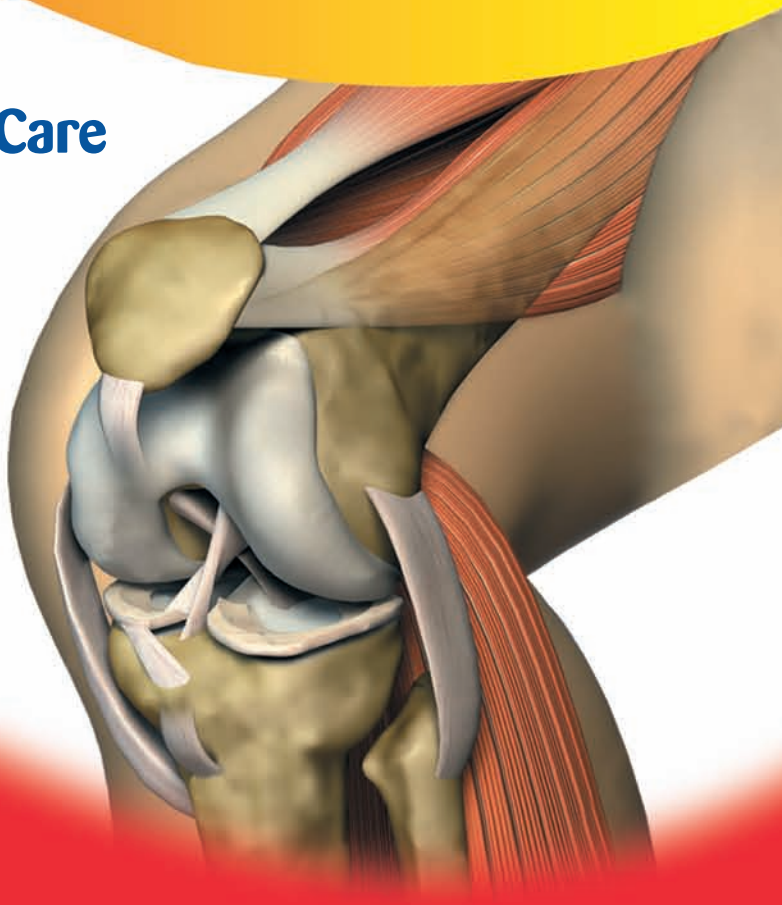
An Introduction to

Natural Approaches to Joint Care

An easy to follow training booklet for medicine counter assistants



Glucosamine, Cod Liver Oil and Fish Oils

WHY UNDERTAKE THIS TRAINING?

Osteoarthritis (OA) is the term used to describe a gradual degeneration of the movable joints, often the knees and hips, resulting in increasing stiffness and pain that can become severe over time. As early symptoms can be mild, self-treatment is often preferred in the first instance and even people with more advanced joint problems may choose to manage their symptoms without the use of prescription medicines. These patients are likely to see the pharmacy as a good source of advice and may want to discuss the various treatment options available. Cod liver oil, fish oils and glucosamine are widely advertised for relief of joint problems and are increasingly supported by personal and medical testimonials in the media. They will be attractive to some patients because they are naturally-derived health supplements and you may well be asked for your opinion on their merits and to describe their benefits before you refer them, if necessary, to the pharmacist.

AIMS

The aim of this training booklet is to provide you as a medicine counter assistant (MCA) with an understanding of these natural supplements: what they are, how they work, and whom they benefit; to supply evidence-based information on their effectiveness, together and separately; and to touch on other therapies available for OA relief.

The various types of products available in pharmacy and on prescription are explained and, at the end of the booklet, a series of questions provides an opportunity to test your knowledge and understanding of osteoarthritis and the medicines and food supplements popularly used for symptom relief.

The importance of continually updating your knowledge and skills within pharmacy is vital.

Assistants who successfully complete the assessment questions will be awarded a certificate. To obtain your certificate you will need to submit your answers to the address provided.

OBJECTIVES

After studying the training booklet, you will:

- Have an understanding of joint changes that can lead to joint pain and stiffness
- Be able to describe the role of cod liver oil, fish oils and glucosamine in joint mobility and pain relief
- Be able to explain why cod liver oil, fish oils and glucosamine can benefit certain individuals
- Be aware of the different cod liver oil, fish oil and glucosamine products available
- Have an understanding of where cod liver oil, fish oils and glucosamine fit within the portfolio of health supplements for joint care
- Have an understanding of the terms used in joint mobility and pain relief

INTRODUCTION

Joint problems affect a large proportion of the population. By far the most prevalent is osteo- or 'wear and tear' arthritis. It is not to be confused with the auto-immune disease, rheumatoid arthritis, which also affects the joints.

Osteoarthritis can affect any joint, but the hips, knees, and lower spine are the joints most commonly affected. Patient support group, Arthritis Care, estimates there are 8.5 million people living with osteoarthritis (OA) in the UK. Given our ageing population, this number is set to increase.

Cod liver oil is a traditional health supplement that has been taken for literally hundreds of years for the relief of joint pain and stiffness. Only in the past thirty years has research shown that it is the omega-3 fatty acids in cod liver oil and fish oils that have such a beneficial effect on joint inflammation and cartilage degeneration. Glucosamine is a relative newcomer to the list of health supplements that people may choose for joint health protection and relief of joint problems.

BACKGROUND TO COD LIVER OIL AND GLUCOSAMINE

Cod liver oil is the single best-selling natural health supplement in the UK with a long, anecdotal health tradition. Early in the 1900s it was discovered that cod liver oil was a good natural source of vitamins A and D and its free distribution during World War II and the years of rationing that followed was credited with practically eradicating the bone-crippling disease, rickets. Since more recent fatty acid research identified that cod liver oil is also a rich source of the important long-chain omega-3 fatty acids, its health reputation – and that of fish oils - has risen significantly.

Sales of glucosamine are growing rapidly. Although word-of-mouth and editorial recommendation in newspapers and magazines are important factors driving this growth, there is now an accumulation of robust scientific evidence to support glucosamine supplementation for osteoarthritis relief.

It is important that medicine counter assistants are aware of the scope and limits of the evidence supporting claims for cod liver oil, fish oils and glucosamine in order to give informed answers to customer queries.

ANATOMY OF A JOINT

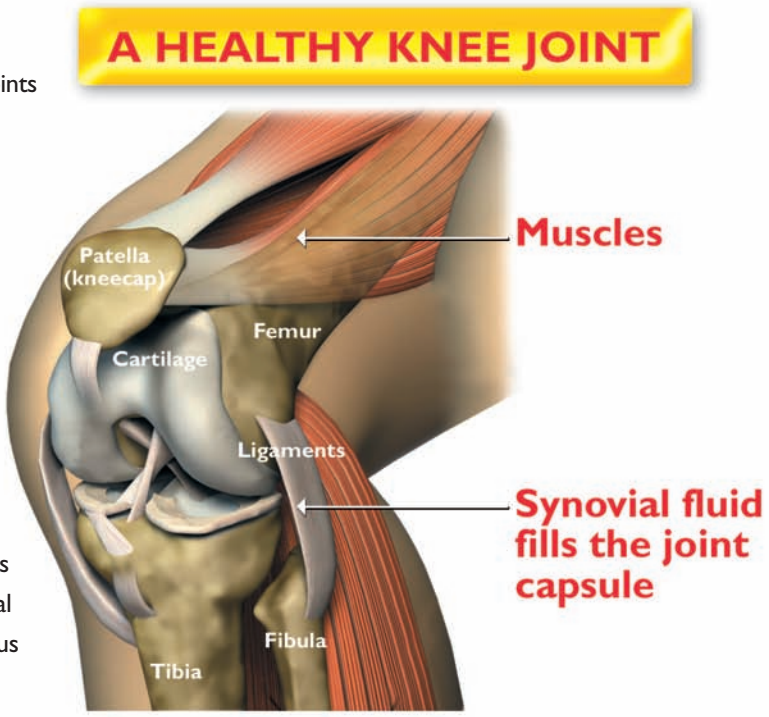
Joints are the place where two bones meet. All bones in the body, except for one (the hyoid bone in your neck), form a joint with another bone. Most joints are designed to protect the ends of bones where they meet, they hold your bones together and they allow the rigid skeleton to move.

Movable joints are described as 'synovial' joints - characterised by the presence of a closed space, or cavity, between the bones.

The most common synovial joints include:

- Ball and socket joints, like your hip and shoulder joints
- Hinge joints, like those in your knee and elbow
- Ellipsoidal joints, such as the joint at the base of your index finger
- Gliding joints that occur between the surfaces of two flat bones held together by ligaments (some of the bones in your wrists and ankles move by gliding against each other)
- Pivot joint, in your neck, that allows you to turn your head from side to side.
- Saddle joints, found only in your thumbs.

The joint cavity of synovial joints is contained in a capsule made up of a thick, tough outer layer (fibrous capsule) and a more delicate thin inner layer (synovial membrane). This capsule adheres firmly to the fibrous sheath that covers the articulating bones (bones being joined).



Synovial joints are made up of bone, connective tissue (cartilage, tendons and ligaments) and synovial fluid.

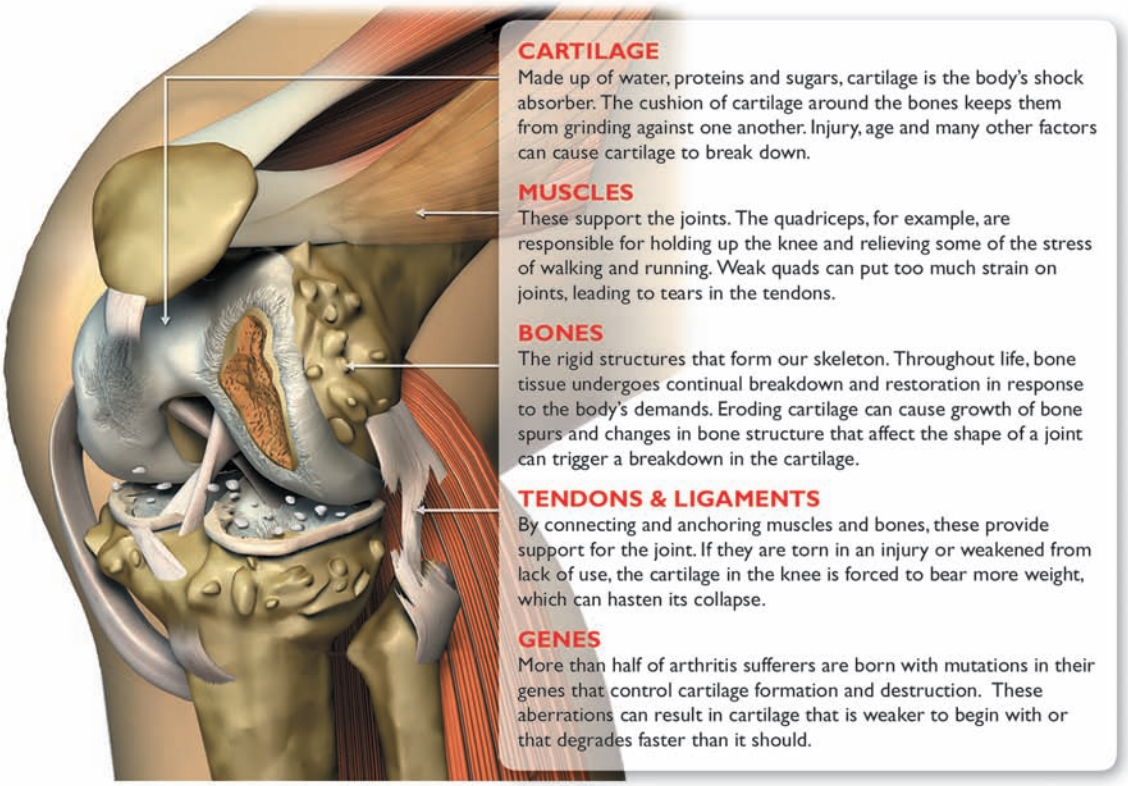
THE AGEING JOINT

Doctors used to think of osteoarthritis as a disease of old age, but they now believe that this form of arthritis, the most common of more than 100 types, begins in our 30s, 20s or even younger, although the first telltale twinges may not be felt until our 40s and 50s.

Professional sports players like footballers may be more at risk of early joint changes than the general population. People involved in frequent, intensive sports participation and some occupations requiring repetitive use of certain joints may also complain about joint pain and stiffness. Smoking and overweight are also associated with an increased risk.

Bones, muscles, tendons and ligaments are all involved in maintenance of joint function, but the health of cartilage, is paramount. Connective tissues are continuously being remodeled as they are worn away during activity and then reformed afterwards. As we age we become less efficient at renewing these tissues, especially cartilage.

A DAMAGED KNEE JOINT



CARTILAGE
Made up of water, proteins and sugars, cartilage is the body's shock absorber. The cushion of cartilage around the bones keeps them from grinding against one another. Injury, age and many other factors can cause cartilage to break down.

MUSCLES
These support the joints. The quadriceps, for example, are responsible for holding up the knee and relieving some of the stress of walking and running. Weak quads can put too much strain on joints, leading to tears in the tendons.

BONES
The rigid structures that form our skeleton. Throughout life, bone tissue undergoes continual breakdown and restoration in response to the body's demands. Eroding cartilage can cause growth of bone spurs and changes in bone structure that affect the shape of a joint can trigger a breakdown in the cartilage.

TENDONS & LIGAMENTS
By connecting and anchoring muscles and bones, these provide support for the joint. If they are torn in an injury or weakened from lack of use, the cartilage in the knee is forced to bear more weight, which can hasten its collapse.

GENES
More than half of arthritis sufferers are born with mutations in their genes that control cartilage formation and destruction. These aberrations can result in cartilage that is weaker to begin with or that degrades faster than it should.

Cartilage is a translucent, tough, flexible and elastic connective tissue that acts as a cushion or shock absorber when weight is placed on the joints. Its smooth, slippery surface also allows the bone ends to move freely. Healthy cartilage requires four things: fluid for lubrication and nourishment; proteoglycans and glycosaminoglycans (GAGs) to attract and hold fluid; collagen to hold proteoglycans in place; chondrocytes to clean away old, and produce new, proteoglycans and collagen. When any of these elements is missing, cartilage can deteriorate and osteoarthritis will begin to develop.

Sometime between ages 40 and 55, cartilage takes longer to replenish itself. As the cushion of cartilage thins and the bones start to grind together, the body's immune system is triggered to release destructive proteins that chew up the damaged tissue, resulting in chronic inflammation in the joints.

GLUCOSAMINE

What is Glucosamine?

Glucosamine is a form of amino sugar found naturally in the body where it has a vital role in cartilage formation and repair. Glucosamine supplements are derived from the shells of shellfish like crab, lobster or shrimp – and hence may not be suitable for certain customers (e.g. those who are vegetarian or vegan).

How Is Glucosamine thought to Work?

Glucosamine is a major building block of proteoglycans and is needed to make glycosaminoglycans (GAGs) proteins that bind water in the cartilage matrix. Each person produces a certain amount of glucosamine but age affects the body's ability to produce enough. An insufficient supply of glucosamine restricts the efficiency of cartilage rebuilding and can delay repair of cartilage and other connective tissues. It cannot easily be obtained from the diet as it is found in only a small number of foods.

Glucosamine supplements work to stimulate joint function and repair. They have been proven effective in numerous scientific trials for easing osteoarthritis pain, aiding in the rehabilitation of cartilage, renewing synovial fluid, and repairing joints that have been damaged by osteoarthritis

What Types of Glucosamine Are There ?

Glucosamine is available as glucosamine sulphate or glucosamine hydrochloride. The suffix 'sulphate' or 'hydrochloride' indicates which of the two salts are used. Glucosamine sulphate is more widely recommended as this is the kind that has been used in more than 90% of studies investigating the effect of glucosamine on osteoarthritis where it has been found to help reduce inflammation and pain, and help with joint movement.

In pharmacy, glucosamine sulphate is available on general sale in tablet, capsule or liquid form. It is also available on a doctor's prescription. Glucosamine may also be injected directly into the muscle.

Capsules and tablets are the most popular formats in pharmacy.

What is the Recommended Dose of Glucosamine ?

There is no RNI or RDA for glucosamine. Products available in pharmacy offer a choice of levels to suit individual requirements. The maximum recommended dose is 1500mg per day. This can be taken as a single dose or divided into 500mg three times a day.

Can Glucosamine be Taken with Other Supplements or Medicines ?

Glucosamine has no known adverse interactions with other supplements. Glucosamine is often found in combination with chondroitin, an amino sugar also found naturally in the body involved in the attraction of fluid that lubricates the joints. It is also sold in combination with cod liver oil, a traditional supplement for joint care that has recently been shown to reduce inflammation in the joint and halt, even reverse, the breakdown of cartilage.

Glucosamine can be taken together with paracetamol and NSAIDs (non-steroidal anti-inflammatory drugs).

Patients taking prescribed medicines for arthritis or other illnesses should consult their GP before trying any nutritional supplement. Patients should never stop or reduce any currently prescribed medications without consulting their doctor.

RNI stands for Reference Nutrient Intake, and are the UK values, which were decided after major Government research in 1991. They are the correct amount for 97% of people, broken down into the needs of men, women, children and over-50s

RDA stands for Recommended Daily Allowance. Set by the EC, they are minimum requirements, ie how much of a nutrient an adult needs to avoid deficiency.

Who should not take Glucosamine?

There are no contraindications to glucosamine supplementation, although two groups of patients are advised to first consult with their GP:

- Individuals with diabetes: There is a hypothetical possibility that glucosamine may increase insulin resistance and consequently affect glucose tolerance but there is no evidence to this effect..
- Pregnant women: should always consult their GP before taking any medicine or supplement.

As glucosamine is derived from shrimp and crab shells, people with shellfish allergy may be allergic to glucosamine products. Vegetarians and vegans may choose not to take glucosamine.

Which Glucosamine?

Glucosamine products are not regulated so the reassurance of a reputable brand name is important. Customers should be advised to follow the instructions supplied.

Cod liver oil and glucosamine are classed as food supplements, not medicines with a medicinal Product Licence (PL), and as such are subject to food supplement restrictions on health claims in advertising and pack copy.

However, in the UK, one Seven Seas Cod Liver Oil product has been granted a PL.

Some medicines used by people with arthritis; NSAIDs for example, are available GSL (general sales list) and P (Pharmacy only) although strengths will differ.

Oral NSAIDs are also prescribed.

Licensed medicines are only available with pharmacist approval and carry P or PL designation on pack.

COD LIVER OIL AND FISH OILS

What is Cod Liver Oil? What are Fish Oils?

As its name implies, cod liver oil is extracted from the liver of codfish and refined to pharmaceutical standards. Fish oils are obtained from the flesh of oily fish like herring, mackerel and salmon. Both are rich sources of the fat-soluble vitamin D and the long-chain omega-3 polyunsaturated fatty acids (LCPUFA) that, like vitamins, can only be obtained from the diet. Cod liver oil also supplies fat-soluble vitamin A.

How are Cod Liver Oil and Fish Oils Thought to Work?

The vitamin content of cod liver oil helps maintain overall good health. It provides vitamin A which is essential for normal growth and development and has antioxidant properties that protect against free radical damage. Both cod liver oil and fish oils contains vitamin D, sometimes called 'the sunshine vitamin', which is essential for bone development and maintenance.

However, cod liver oil and fish oils have more recently been identified as an important source of the long-chain omega-3 fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) found uniquely in foods of marine origin. Research has found that these valuable nutrients offer many physical and mental health benefits, among them the ability to halt, even reverse, cartilage destruction.

Studies have shown that, by switching off the enzymes that break down joint cartilage, the omega-3 fatty acids can slow the progress of cartilage degradation, reduce inflammation and lessen pain.

What Types of Cod Liver Oil and Fish Oils are There?

Both cod liver oil and fish oils are available as liquids that can be taken from the spoon or mixed with milk or orange juice, or in capsules. There is a choice of ingredient levels in both formats. Most cod liver oil and fish oil products are available on general sale in pharmacy although some fish oils are also available on prescription for heart patients and one cod liver oil product does have a product licence (PL). (see note).

What is the Recommended Dose of Cod Liver Oil and Fish Oils?

There is no RNI or RDA for cod liver oil or fish oils. The range of cod liver oil products and formulations available in pharmacy offer a choice of vitamin and omega-3 levels to suit individual needs. However, as the fat soluble vitamins can be stored by the body, it is important to follow the manufacturer's guidelines provided. Fish oils are also available in a choice of omega-3 levels..

Can Cod Liver Oil be Taken with Other Supplements or Medicines ?

There are no known adverse interactions with other supplements or medicines. Indeed, cod liver oil is popularly available in combination with other products such as multivitamins and calcium. Their joint health reputation makes cod liver oil and fish oils perfect partners for other supplements promoting joint health like glucosamine and chondroitin.

Cod liver oil and fish oils can be taken for relief of arthritis symptoms alongside over-the-counter or prescribed analgesics and NSAIDs. In fact, studies have shown that omega-3 fatty acid supplements may allow arthritis sufferers to reduce their dose of these drugs.

As the omega-3s have blood-thinning properties (one of the reasons they are thought to help maintain heart health) anyone taking warfarin or other anticoagulant medication should first consult their doctor.

Who Should Not Take Cod Liver Oil or Fish Oils?

There is a deficiency of the omega-3 fatty acids in the typical Western diet, leading to recommendations from nutritionists that people should ensure an adequate intake by eating oily fish or taking cod liver/fish oil supplements.

However, anyone taking prescription medicines should speak with their doctor before taking any health supplement.

Because it contains vitamin A, pregnant women are advised against taking cod liver oil.

Vegetarians and vegans would not take cod liver oil or fish oils. Flaxseed oil is an acceptable alternative omega-3 supplement for these groups but it is important to explain that it is not considered equally effective. Flaxseed oil supplies omega-3 alphalinolenic acid (ALA) which has to undergo metabolic processes in the body to be converted to the long-chain omega-3 fatty acids EPA and DHA. This conversion is inefficient at best. In order to maximize the conversion process, the amount of omega-6 fatty acids in the diet should be reduced by cutting down use of vegetable margarines and oils.

Which Cod Liver Oil or Fish Oils Formulation?

Whether to take a liquid or capsule formulation is a matter of personal preference. But not all cod liver oil or fish oil products are the same. Not only is there a wide variation in the omega-3 and vitamin content between various products from the same manufacturer to allow for individual requirements, there may also be a variation between the stated omega-3 content and the actual omega-3 content.

NATURAL AND SAFE ?

It is important to be aware of any contraindications in the use of natural medicines and supplements and to use the 2WHAM technique when advising any patient. If you are in any doubt, particularly when dealing with people who are pregnant or who have a long-standing illness, refer these patients to the pharmacist in the first instance or to their GP. Patients being treated by their GP should be instructed to keep him/her informed of any medicines or food supplements purchased over-the-counter.

PATIENT OPTIONS FOR THE MANAGEMENT OF OSTEOARTHRITIS

Cod liver oil, fish oils and glucosamine are commonly used to help maintain joint health. There are, however, a large number of other patient options for the management of osteoarthritis ranging from prescribed NSAIDs, to mild analgesics available over-the-counter (OTC) and alternative therapies such as acupuncture, aromatherapy and massage. Non-drug, lifestyle changes, such as losing weight, using relaxation techniques and taking appropriate exercise can also play an important role in encouraging positive changes for people with osteoarthritis.

GLUCOSAMINE AND COD LIVER OIL

It can be seen from the evidence that glucosamine and the omega-3s found in cod liver oil/fish oils may help maintain joint health. But as they work in different ways, together they are more effective than separately. And as both add to what the body needs to function efficiently they help rather than interfere with the body's own repair mechanisms.

Further information and patient advice may be obtained from:

Arthritis Research Campaign:
Copeman House St Mary's Court, St Mary's Gate, Chesterfield S41 7TD
Tel: 0870 850 5000
Website: www.arc.org.uk

Arthritis Care:
18 Stephenson Way, London NW1 2HD
Tel: 0207 380 6500
Helpline: 0808 800 4050 free from 12 noon to 4pm or 0207 380 6555 from 10am to 4pm (standard charges)
Website: www.arthritiscare.org.uk

GLOSSARY OF TERMS

Synovial fluid - A transparent, sticky fluid resembling the white of an egg, secreted by synovial membranes lubricating the joint.

Articulating bones - Bones that meet in a joint to allow the rigid skeleton to move.

NSAIDs - Non-steroidal anti-inflammatory drugs prescribed to reduce inflammation and pain.

Proteoglycans - Compounds which are a combination of proteins and carbohydrates that provide a strong framework for cartilage.

Chondrocyte - A cartilage cell found embedded in the matrix.

Glycosaminoglycans - Highly negatively charged molecules with high viscosity and low compressibility which makes them ideal for lubricating joints

Polyunsaturated fatty acids (PUFAs) - Major components of fats, fatty acids can be saturated, monounsaturated or polyunsaturated. PUFAs are important for maintaining the membranes of all cells, for regulating body cholesterol metabolism and for making prostaglandins which regulate many body processes which include inflammation and blood clotting. Two polyunsaturated fatty acids (PUFAs) that cannot be made in the body are omega-6 linoleic acid and omega-3 alphalinolenic acid. They must be provided by diet and are known as essential fatty acids.

Long-chain polyunsaturated fatty acids (LCPUFAs) - Biologically important fatty acids metabolized from the parent essential fatty acid: eicosapentaenoic acid and docosahexaenoic acid (EPA and DHA) from omega-3 alphalinolenic acid (ALA); and gammalinolenic acid (GLA) from omega-6 linoleic acid (LA) for example.

ASSESSMENT QUESTIONS

From the list supplied beneath each question, please circle your answer on your Assessment Answer Sheet. Note that there is only one correct answer to each question.

Q1 How many people in the UK are said to have joint degeneration described as osteoarthritis?

a. 100,000
b. 5.2 million
c. 8.5 million

Q2 Which of these four lifestage sectors is most likely to experience 'wear and tear' osteoarthritic joint problems?

a. Children and teenagers
b. People aged 50+
c. Men
d. Women

Q3 Which of the following does NOT represent an increased risk factor for osteoarthritis?

a. Sedentary occupation
b. Intensive sports participation
c. Smoking
d. Overweight

Q4 Which of the joints below are NOT synovial joints?

a. Hip joints
b. Skull joints
c. Knee joints

Q5 What is the source material for glucosamine?

a. Shells of shellfish
b. Shark cartilage
c. Components of certain nuts & seeds

Q6 What other natural substance is often combined with glucosamine to relieve joint problems?

a. Chondroitin
b. B-complex vitamins
c. Evening primrose oil

Q7 What nutrient may help people with joint pain and stiffness:

a. Garlic
b. Omega-3 fatty acids
c. Probiotics

Q8 What do you understand by the term food supplement?

a. A formulation for body builders that increases muscle mass
b. A supplement that allows people to eat badly but stay healthy
c. A nutrient that is available from a well-balanced diet but not necessarily in sufficient amounts for good health

Q9 How may an insufficient supply of glucosamine be detrimental to joint health?

a. By drying up synovial fluid
b. By restricting efficiency of cartilage rebuilding and repair
c. By accelerating osteoporosis

Q10 What do you understand by the term Product Licence (PL)?

a. A licence allowing the product to make medicinal claims and restricting product sale to pharmacies with pharmacist approval
b. A licence allowing the product to be sold anywhere
c. A licence assuring the safety of the product for all people of all ages

Finally, could you answer the following two questions:

Q11 Did you find this material helpful ?

a. Very helpful
b. Fairly helpful
c. Not helpful

Q12 Would you be interested in receiving more training information from Seven Seas Ltd.

a. Yes
b. No

ASSESSMENT ANSWER SHEET

Name: _____

Address: _____

_____

_____

Postcode: _____

Phone: _____

E-mail: _____

Name of Phamacy: _____

_____

Please circle one letter only:

Q1	a	b	c	
Q2	a	b	c	d
Q3	a	b	c	d
Q4	a	b	c	
Q5	a	b	c	
Q6	a	b	c	
Q7	a	b	c	
Q8	a	b	c	
Q9	a	b	c	
Q10	a	b	c	
Q11	a	b	c	
Q12	a	b		

Please submit your answers to:

The Marketing Department
FREEPOST
Seven Seas Ltd.
Hedon Road
Hull
HU9 5BR

You will receive your certificate, subject to the submission of 10 correct answers within 30 days of posting.

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Every body needs healthy joints

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