Osteoarthritis (OA) is known to be a painful condition, but there are many other effects of this progressive disease. These include stiffness and difficulty moving, and loss of muscle tone, strength and stamina. Many people with OA also experience fatigue, poor sleep, anxiety, depression, social isolation, loss of work, financial difficulty and a general deterioration in quality of life.

This article discusses the pain experienced by people with OA, and the physical, social and psychological consequences of the condition.

Pain
Pain is the symptom that prompts most people with OA to visit their GP, and is the main indication for joint replacement (Hawker et al, 2008).

Pain can be difficult to describe, and even more difficult to separate from the many other symptoms that individuals with OA experience. Research suggests that many find it difficult to disentangle pain, stiffness and function, as the three seem intrinsically linked (Gooberman-Hill et al, 2009).

The “usual” pain of OA is related to the localised inflammatory conditions inside the joint, and is triggered by movement and load bearing. Resting the joint helps to relieve pain, but many people also experience pain at rest (spontaneous pain), and night-time pain. These types of pain are more challenging to understand.

Initiation of pain
Joints are supplied by the same sensory nerves that innervate the skin and other tissues – the A delta (Ad), A beta (Ab) and C fibres. These fibres are present in most of the tissues in the joint: meniscus, synovial membrane, bone, periosteum, ligament and fat, but not in normal cartilage.

Ad fibres are normally responsible for the transmission of sharp pain, C fibres for dull, aching pain, and Ab for non-painful touch. Another class of C fibre, the silent nociceptor, is also present; it does not participate in sensation until exposed to inflammatory conditions. Inflammation leads to a reduction in the activation threshold of Ad, Ab and C fibres; this is known as peripheral sensitisation. Inflammation also awakens the silent nociceptors, which participate in pain signalling. Sensitised nociceptors can be activated by stimulus, such as movement and load bearing.

People with OA also experience spontaneous pain for which there is no obvious cause.
stimulus; it is not caused by movement, pressure or loading. Studies exploring the activation of brain tissues during pain experiences show that inflammatory and spontaneous pain have different mechanisms. The pattern of brain activity that accompanies spontaneous pain is seen in chronic low back pain, and post-herpetic neuralgia (Parks et al, 2011).

There is a long way to go before we completely understand what causes OA pain, but we do know that it does not depend on the amount of joint damage nor on the amount of activity undertaken.

Intensity and consistency of pain
OA pain intensity is subjective, varying from patient to patient. It is not possible to use a numerical pain scale to assess whether one person’s pain is more or less intense than another’s. Pain may not be present every day, but is usually present most days.

Pain can be dull and aching, punctuated by intermittent, more intense episodes, and is unpredictable, especially when the main site is the knee. Many people with OA cannot predict when they are likely to experience an exacerbation of pain, or from locking or collapse of the joint (Gooberman-Hill et al, 2009). This makes it difficult for them to engage in planned activities and to socialise, contributing to frustration and low mood. Many people with OA say that intermittent, acute exacerbations of pain are difficult to cope with, causing great distress and disruption to their lives (Hawker et al, 2008).

Research suggests the more severe and consistent their pain is, the more likely people with OA are to progress to joint replacement surgery (Wise et al, 2011). Despite this, severity of pain does not correlate with the severity of OA seen on X-ray, but it is related to changes in walking gait and muscle use. People with pronounced OA usually walk more slowly, and use their muscles to guard and support the affected joint (Astephen and Wilson, 2011).

Descriptions of pain
The descriptors used for pain differ depending on the site of the OA, and whether the person has pain elsewhere in the body (Gooberman-Hill et al, 2009).

The range of words used to describe pain demonstrates the multifaceted nature and complexity of OA pain (Box 1). Most people describe it as a steady, dull background pain, punctuated with episodes of more intense, sharper pain, which are more difficult to cope with (Hawker et al, 2008). People with pain caused by OA also describe its psychological effect, the restrictions it causes, and concerns they have relating to the pain, such as fear of the joint giving way without warning (Hosie and Dickson, 2000). This illustrates the difficulty in trying to separate the physical sensation of pain from its psychological and functional effects.

The pain descriptors used vary according to the severity of the pain being experienced at the time, with dull types of pain predominating at lower intensities and sharper qualities mentioned when the pain is more intense. Descriptors usually associated with neuropathic pain – pain that originates from nerve damage or dysfunction – are also used. This correlates with the understanding that there is more than one type of OA pain (Hochmann et al, 2010).

Impact of pain
The pain and stiffness caused by OA have a variety of physical, psychological and social effects, and most people with OA find their pain becomes progressively worse over time.

Initially, people describe pain that is present only during or following a period of intense activity, such as playing a sport. This can limit some high-impact activities, such as skiing. Gradually, the pain becomes more constant, although still with activity-related exacerbations, such as climbing stairs or walking. Eventually, the constant background pain is punctuated by intense episodes, leading to avoidance of activities. OA appears to be a progressive disorder in most cases.

Physical impact of OA
Pain often makes people with OA in the knee favour one side over the other, as a strategy to reduce the pain and the risk of the joint giving way. Those with hip pain tend to lie on one side to control the pain.

Many people with OA also complain of joint instability and can be more prone to falls (Yakhdani et al, 2010). The increased risk of falls is due to a complex set of interactions between factors such as confidence in movement, joint changes, ageing, medication use, and pain (Blyth et al, 2007).

Supportive aids
Around half of those with symptomatic OA use supportive aids, such as walking sticks, frames and support garments. Fewer than half of these aids are obtained by prescription, meaning there is the potential for incorrect sizing and unsafe technique (van der Esch et al, 2003).

Walking aids and altered gait are two of the biggest risk factors for falls, so it is important that people who use walking aids are given the appropriate advice from physiotherapists (Deandrea et al, 2010).

Stairs
Using stairs is a significant problem for many people with OA, particularly those with an affected knee. Descending can be more of a problem than climbing because of the deep flexion required. This leads some people to compensate by using a two feet on one step approach, leading with the affected leg, or descending backwards. Both methods can partially alleviate the stress on the affected knee (Hasegawa et al, 2010).

Joint movement
OA creates difficulties in achieving a usable range of movement in the joint, especially after a period of rest, when stiffness is greatest.

According to Fautrel et al (2005), more than 80% of people with OA report difficulties with activities of daily living, regardless of the main site of the OA.

### Box 1: Descriptions of Osteoarthritis Pain

- Sharp
- Gnawing
- Hurt
- Pinch
- Needling
- Burning
- Knife
- Terrorising
- Throbbing
- Excruciating
- Sore
- Paralysing
- Grind
- Spike
- Discomfort
- Pins and needles
- Locking
- Numbness
- Stiffness
- Tenderness
- Unstable
- Nagging
- Dull
- Weakness
- Gives way
- Seizing
- Pressured
- Crushing
- Tightening
- Annoying
- Irritating
- Distressing
- Draining
- Embarrassing
- Depressing
- Tiring

### Box 2: Activities Made More Difficult by OA

- Mobility outside
- Mobility indoors
- Grocery shopping
- House cleaning
- Meal preparation
- Sports
- Gardening
- Odd jobs
Around 20% also reported missing work as a result of their OA (Box 2). Pain and loss of functional freedom can increase reliance on others (Gooberman-Hill et al, 2009).

**Sleep disturbance**
People with arthritic or painful complaints experience a high level of sleep disturbance. Poor sleep contributes to higher levels of pain, and can increase distress (Smith et al, 2009).

Quality of sleep is an important component of OA management because of the impact poor sleep has on pain and coping. Both acupuncture and yoga have demonstrated positive effects on poor sleep for people with OA (Taibi and Vitiello, 2011; Huang et al, 2010).

**Social impact of OA**
People with OA experience ongoing pain, painful exacerbations, depression and joint instability, which means they find regular employment difficult.

This clearly depends on the type of employment; work that involves driving, manual labour, kneeling, or carrying loads is particularly hard to sustain. These jobs are often associated with poor sleep protection and vulnerability to financial hardship, contributing to an increased risk of financial stress, and loss of the social and esteem functions fulfilled by work (Sayre et al, 2010; Gignac et al, 2008).

**Social support**
Social support helps people to cope with ill health and other hardships. Social isolation, as a result of unpredictable pain and disability, is therefore likely to cause particular difficulties for some people with OA.

Those with pessimistic personalities are more likely to be harder hit by a lack of social support; they are more likely to experience social stress and difficulty forming and maintaining supportive relationships. Pessimism is also linked with poorer performance of activities, such as walking and climbing stairs. Lack of social support is also linked with higher pain levels, a greater prevalence of pain, and lower levels of satisfaction with life (Ferreira and Sherman, 2007).

**Sexual intimacy**
People with OA can experience difficulty with sexual intimacy because they are concerned that sex will exacerbate their pain. The loss of intimacy within a close relationship can affect quality of life, communication, and sense of self.

There is very little research exploring sex and musculoskeletal pain, and studies that have been published focus on rheumatoid arthritis rather than osteoarthritis (Hill et al, 2003). According to Hill et al (2003), joint pain does disrupt intimate relationships. Patients will need support and advice which nurses may feel ill-equipped to deliver.

**Psychological impact of OA**
People with OA often suffer from depression and anxiety, exacerbated by a lack of self-efficacy and catastrophisation – a tendency to focus on the negative aspects of an experience.

**Depression**
The prevalence of depression in the general older population is estimated to be between 7% and 17% (Luppa et al, 2010), in community-dwelling adults with OA, it is 20% (Rosemann et al, 2007). The likelihood of depression is increased by numerous factors that affect older people with greater frequency, such as concurrent health problems, bereavement and social isolation. The severity of depression in OA is affected by the degree of pain and physical disability (Chou, 2007).

It is often difficult to disentangle the relationship between depression and pain. A recent study of ageing found that the presence of one made the other more likely to develop (Chou, 2007). Pain also makes disability and fatigue more likely, which in turn make depression more likely and can lead to worsening pain (Hawker et al, 2010a). Fatigue and depression are also linked to poor sleep (Hawker et al, 2010b). The reciprocity of these relationships is not surprising given that long-term pain, inflammation and depression share a number of neurobiological features, including increased levels of inflammatory cytokines, such as interleukin-6 (Song and Wang, 2010).

**Catastrophisation**
Catastrophisation can also be exacerbated by other traits, such as catastrophisation and self-efficacy. Catastrophisation is the tendency to focus on the negative aspects of an experience, to feel helpless and to ruminate on and exaggerate the threat of a situation (Box 3).

People who score highly for both catastrophisation and depression tend to experience a synergistic increase in pain and disability (Linton et al, 2010). This demonstrates the relationship between negative emotion and pain perception, but should not to be confused with the outdated and unhelpful construct of psychosomatic pain. The presence of depression and catastrophising are linked to suicidal ideation in people with chronic musculoskeletal pain (Edwards et al, 2006).

**Self-efficacy**
Catastrophisation is also linked to pain and depression via self-efficacy, and the coping strategies employed by people with OA. Self-efficacy has been described as a belief in one’s own competence.

An example of this in OA would be a belief about the ability to climb or descend stairs. A person with high self-efficacy would feel more capable of this physical activity than one with low self-efficacy. This self-belief is related to intention, making it more likely a person with high self-efficacy will independently carry out the activity. Passive coping strategies, such as relying on others, worrying, resting or retreating, are often associated with higher levels of pain and greater levels of disability. Conversely, active coping and self-efficacy can improve mood and reduce disability (Benyon et al, 2010).

An example of the relationship between these factors is morbid obesity, a significant risk factor for OA. According to Somers et al (2008), morbidly obese OA patients exhibit higher levels of catastrophisation, lower levels of self-efficacy for controlling eating, and more intense and unpleasant pain than obese and overweight OA patients.

**Anxiety**
It is estimated that between 31% and 41% of people with OA experience anxiety, compared with around 17% for all types of anxiety in the older adult general population (Arola et al, 2010; Axford et al, 2010; Kirmizioglu et al, 2009).

While a lot more work has been done on the relationship between depression and pain than anxiety and pain, it is suspected that pain makes anxiety more likely. A study by Smith and Zautra (2008) found that anxiety contributes to increased pain in OA to an even greater extent than depression.

**Quick fact**
20% of adults in the community with osteoarthritis also have depression.
OA is a disease commonly associated with pain, but it is much more complex than that for many people. Pain itself is complex, making it difficult to treat, and people with OA also experience anxiety, depression, sleep disturbance, social isolation, and financial worries.

Traits that can increase the risks of negative outcomes for people with OA include catastrophisation, low self-efficacy and pessimism.

OA is a complex disease involving a multitude of interacting factors that can have an unpredictable and negative impact on health and quality of life.

**References**


**Box 3. An Example of Catastrophisation**

Imagine you have come home from work, tired and stressed. Your partner is out in the rainy dark night, walking the dog. You run a warm bath, put some music on and relax.

Your partner returns and realises he has forgotten his key. He knocks on the door but you don’t hear. He shrugs and thinks: “She hasn’t heard me”. He knocks again, louder, and still you don’t respond. He gets a little annoyed and bangs on the door, thinking you are deliberately ignoring him. You still don’t hear.

He starts shouting and banging on the door simultaneously, the anger dissipating to be replaced by fear that something has happened to you. Maybe you have fallen and can’t get up. Maybe you will die and he will be all alone.

Catastrophisation.

Eventually you saunter through the hall on your way to get a cup of hot chocolate and notice the shadow of your door but you don’t hear. He shrugs and says: “I guess something has happened to you. Maybe you have fallen and can’t get up. Maybe you will die and he will be all alone. Maybe you have decided to take your own life. But I’m not sure. Maybe something has happened to you.”

Your partner glares at you and enters the house. You know it will take a long time for him to forgive you. Holding onto the past.

The dog, meanwhile, walks into the house, shakes off the rain and is happy to be somewhere warm and dry.

Living in the moment.

Source: McCracken (2008)

**Discussion**

OA is a disease commonly associated with pain, but it is much more complex than that for many people. Pain itself is complex, making it difficult to treat, and people with OA also experience anxiety, depression, sleep disturbance, social isolation and financial worries.

Traits that can increase the risks of negative outcomes for people with OA include catastrophisation, low self-efficacy and pessimism.

OA is a complex disease involving a multitude of interacting factors that can have an unpredictable and negative impact on health and quality of life.