

# Osteoarthritis and Joint Pain



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# Outline



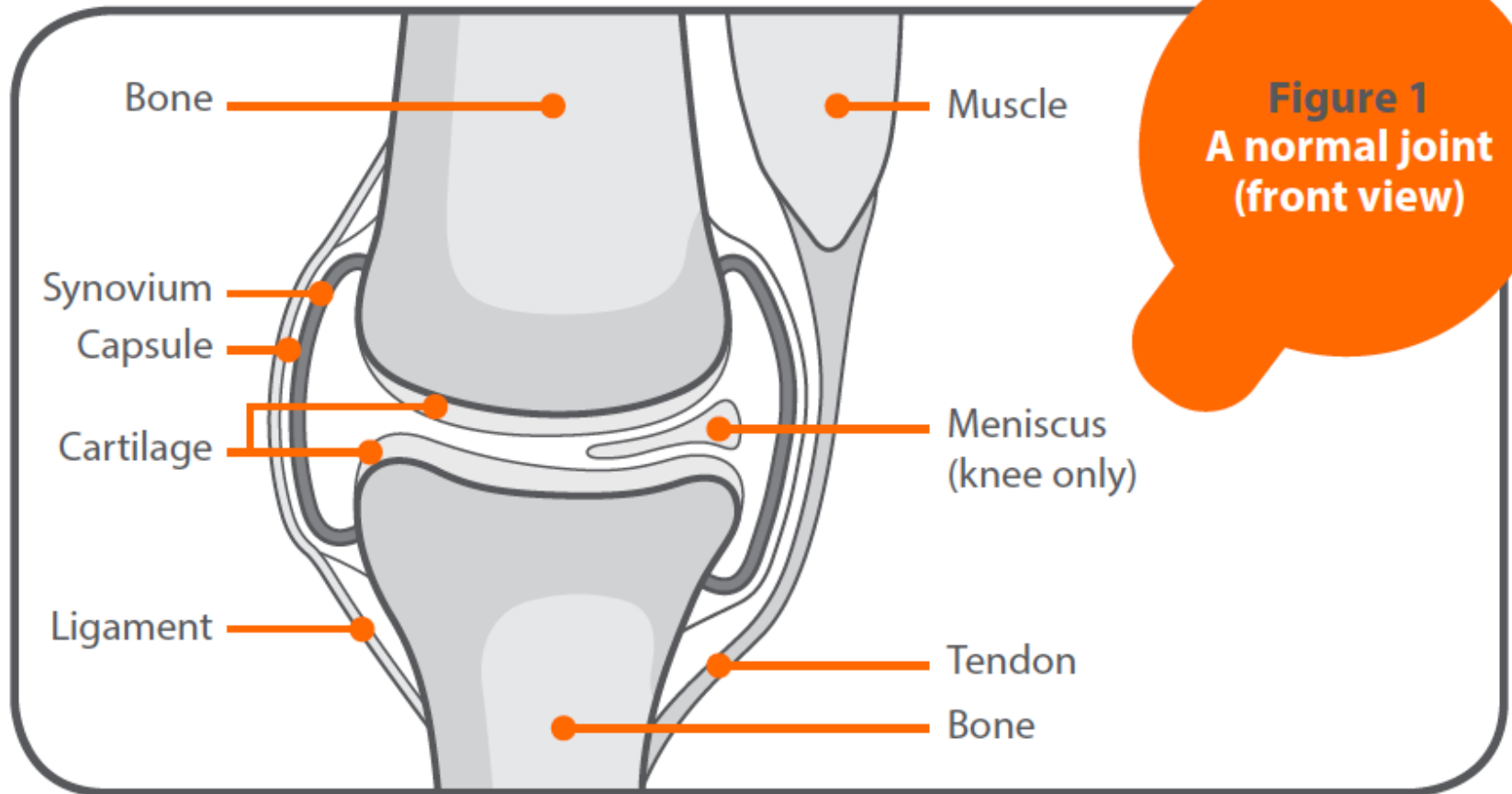
- What is osteoarthritis?
- Symptoms of osteoarthritis
- Epidemiology of osteoarthritis in UK
- What causes osteoarthritis?
- Diagnosis & Investigations
- Management options
- Exercise and weight loss

# What is osteoarthritis?



- Osteoarthritis (OA) is a disease that affects your joints
  - *osteo* means “of the bone”
  - *arthr* means “joint”
  - *itis* means “inflammation”
  - The surfaces within your joints become damaged so the joint does not move as smoothly
  - Often referred to as arthritis, degenerative joint disease or “wear and tear”

# Normal joint anatomy



**Figure 1**  
**A normal joint**  
**(front view)**

# What is osteoarthritis?



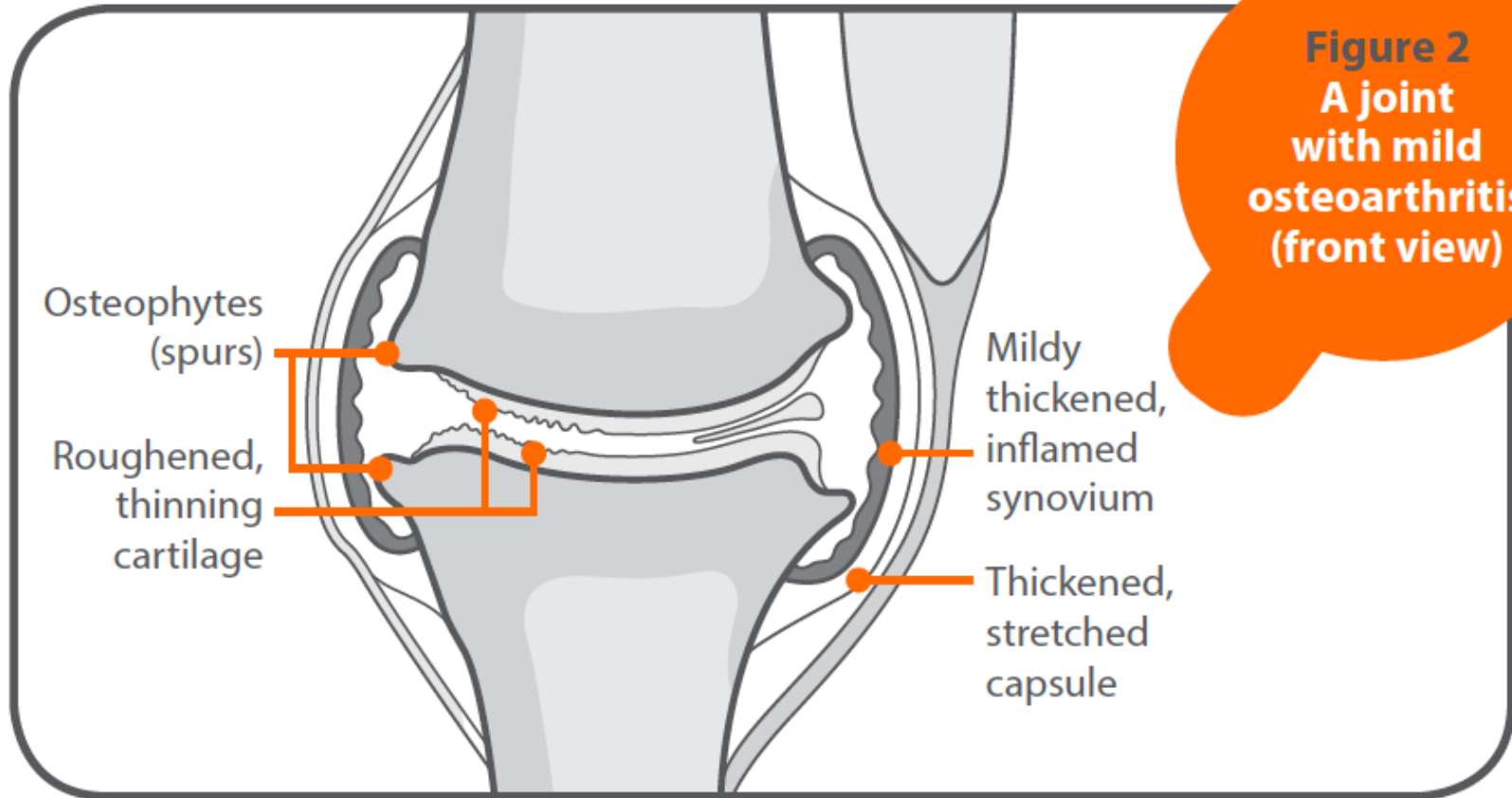
- Some of cartilage covering ends of bones gradually roughens and becomes thin
- The underlying bone beneath the cartilage reacts by growing thicker and broader
- All the tissues within the joint become more active
- As if your body is trying to repair the damage

# What is osteoarthritis?



- **3 changes occur within joint:**
  - The bone at edge of the joint grows outwards forming bony spurs called *osteophytes*
  - The synovium may swell and produce extra fluid causing joint to swell called an effusion (or water on the knee)
  - The capsule and ligaments slowly thicken and contract as if they were trying to stabilise the joint

# Osteoarthritis of joint



# Symptoms of osteoarthritis



- **Pain** and sometimes **stiffness** – can affect one joint or more, i.e. knees
- Pain worse on movement of joint and at the end of the day
- Can be all around the joint or affecting a particular place, i.e. medial side of knee
- Pain can vary from day to day, sometimes depending on level of activity



# Symptoms of osteoarthritis



- Joints may feel **stiff**, often in mornings or after rest but loosen up with walking
- Can **limit movement** of joints
- Can change shape of joints, i.e. fingers, knees
- Joints can give way due to muscle weakness or instability
- Can become swollen, red and warm from inflammation

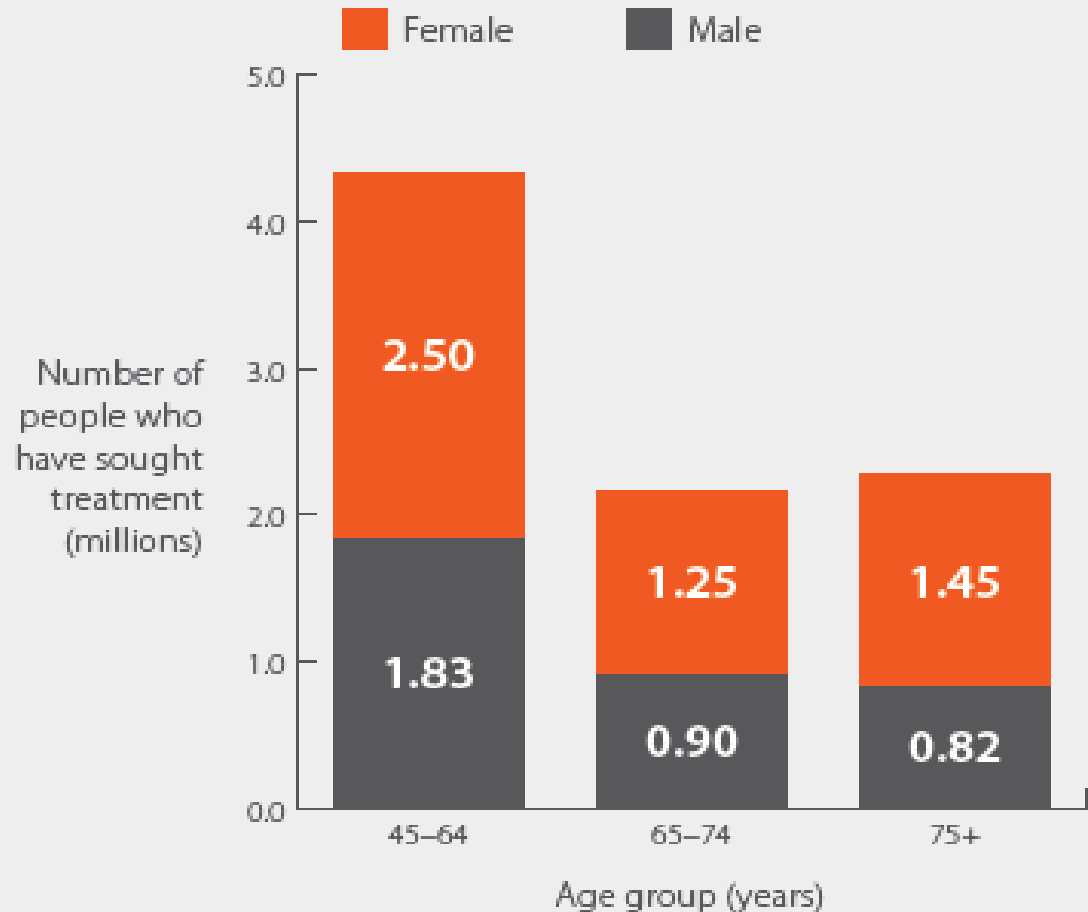
# Osteoarthritis in the UK



- 8.75 million people in UK have sought treatment for OA
  - 33% of people aged 45 years and over
  - 49% of women and 42% of men of people aged 75 and over
- Can affect any joint but the knee is most common site, followed by the hip
  - 4.11 million estimated to have OA of knee (~18% of population aged 45 and over)
  - 2.46 million estimated to have OA of hip (~11% aged 45 and over)

# Osteoarthritis in the UK

- Estimated number of people in UK who have sought treatment for OA
- By gender and age-group
- *Arthritis Research UK* data



# What causes osteoarthritis?



- **Primary OA**

- Develops in previously healthy joints
- Most cases develop > 50 years of age
- Over 50% of people have some OA in joints by 65

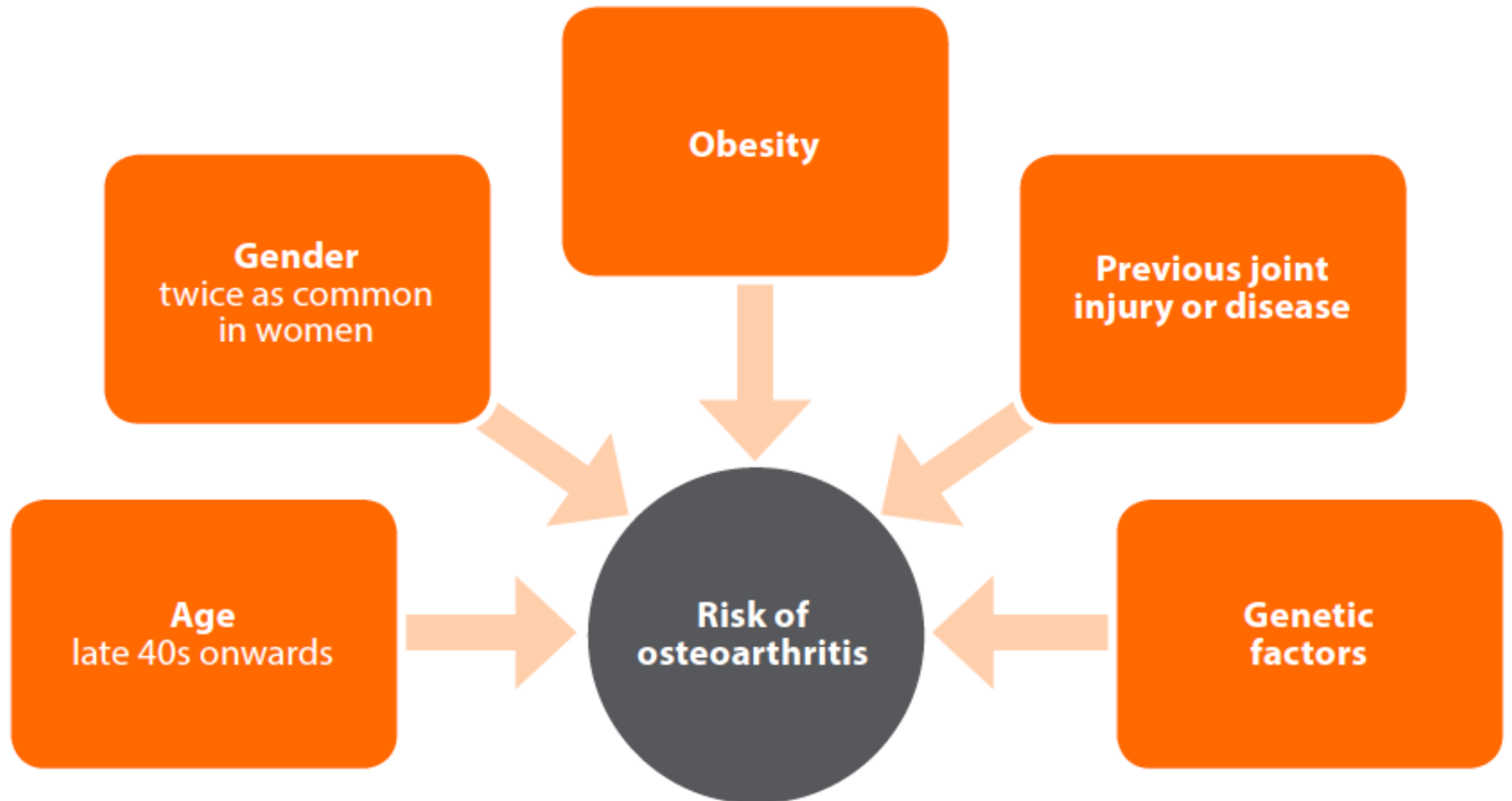
- **Secondary OA**

- Develops in joints already affected by previous injury, damage or deformity
- Can occur at younger age

# What causes osteoarthritis?



**Figure 3** Risk factors for osteoarthritis



# What causes osteoarthritis?



- **Age**
  - Usually starts from late 40s onwards
  - Likely due to wear and tear
  - Weakening of muscles
  - Body less able to heal itself
- **Obesity – modifiable risk factor !**
  - Being overweight significant factor in causing osteoarthritis, especially the knee
  - Also increases chance of progressive worsening

# What causes osteoarthritis?



- **Gender**

- Twice as common in women vs. men
- Most common in women over 50 years
- No strong evidence to link that with menopause
- Often small joints like osteoarthritis of fingers

- **Joint injury**

- Normal activity and exercise do not cause osteoarthritis
- Hard repetitive activity or physically demanding jobs can increase risk
- A joint injury can predispose to early disease

# What causes osteoarthritis?



- **Genetic factors**

- If first degree relatives have osteoarthritis you have greater chance of developing it (40-60%)
- Number of genes have a small effect rather than one particular gene being responsible

- **Other types of joint disease**

- Sometimes damage occurs from other arthritis types, i.e. gout or rheumatoid arthritis



# How is it diagnosed?



- **Diagnosis can be made clinically, if person is:**
  - Aged 45 years or over; and
  - Have activity-related joint pain; and
  - Has no morning stiffness >30 mins
- **Signs:**
  - Reduced range and pain on joint movement
  - Joint swelling / synovitis (warmth + effusion)
  - Bony swelling and deformity due to osteophytes
    - ✦ In fingers presents as DIPJ (Heberden's nodes) or PIPJ (Bouchard's nodes)

# How is it diagnosed?



- Heberden's nodes



# Investigations



- No blood test for osteoarthritis, sometimes useful to rule out other arthritis types
- Plain X-rays:
  - Not routinely required
  - Taken to assess severity of changes caused by OA
  - Can rule out other causes of pain, i.e. fracture
  - May show changes such as bony spurs, joint space narrowing, bone cysts, subarticular sclerosis

# Investigations: X-ray



# Outlook with osteoarthritis



- Common wrong belief is that it is always a progressive and serious disease
- Severity varies but in many is only mild
- In some people the severity and disability OA causes are out of proportion with their age
- Symptoms can wax and wane
  - Sometimes related to the weather
  - Often improve in warmer months

# Management of osteoarthritis



- No cure as yet but there's a lot you can do to improve your symptoms
- **Self-help measures are key**
  - Weight management
  - Exercise
- **Topical and oral pain relief**
  - Non-steroidal anti-inflammatory drugs (NSAIDs)
  - Steroid injections
  - Surgery: joint replacements – thousands yearly
    - ✦ i.e. Knee replacement lasts ~15 years

# Weight Loss



- Weight bearing joints such as vertebrae, hips and knees
- Knees subject to force **3-6 x body weight** when walking
- Connection between cartilage breakdown and the increase in load due to obesity
- Studies show: obese person **14 x more likely** to develop knee OA than normal weight person
- Balanced diet combined with exercise

# Exercise as treatment



- Should be encouraged in all people with OA
- Regardless of age, co-morbidity, pain or disability
- Little and often approach
- Aerobic fitness and local muscle strengthening
- Helps weight loss
- Helps build muscle strength and endurance leading to reduced pain and better joint movement



# Exercise as treatment



- **Strengthening**

- Improve strength and tone of muscles controlling affected joint
- OA of knees can weaken thigh muscles so regular exercising stabilise and protect joint

- **Aerobic**

- Good for general health
- Releases endorphins causing pain-relief
- Physiotherapist can advise on best exercises
- Non weight-bearing exercise like swimming best

# Arthritis UK exercises



## **Straight-leg raise (lying)**

Bend one leg at the knee. Hold the other leg straight and lift the foot just off the bed. Hold for a slow count of 5, then lower. Repeat 5 times with each leg. Try doing it in the morning and at night while lying in bed.



## **Step ups**

Step onto the bottom step of stairs with the right foot. Bring up the left foot, then step down with the right foot, followed by the left foot. Repeat with each leg until you get short of breath. Hold on to the bannister if necessary. As you improve, try to increase the number of steps you can do in 1 minute and the height of the step.

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# Key messages



- OA is a disease of the joints
- Common in the UK
- Diagnosed clinically but confirmed on X-Ray
- Several causes but excess bodyweight is by far the main modifiable factor
- **Exercise is a treatment**
- Small change in bodyweight makes a big difference in symptoms and disease progression

*Any Questions..?*



# Resources



- *Arthritis Research UK*
- *Arthritis Foundation*
- *Patient UK* <http://patient.info/health/osteoarthritis-leaflet>
- *ARC report: osteoarthritis and obesity*
- <http://www.physio-pedia.com/>