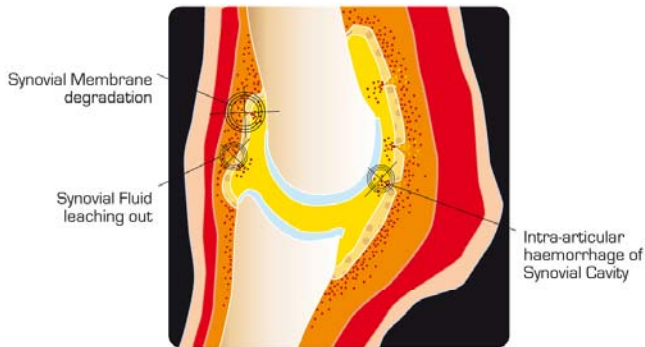


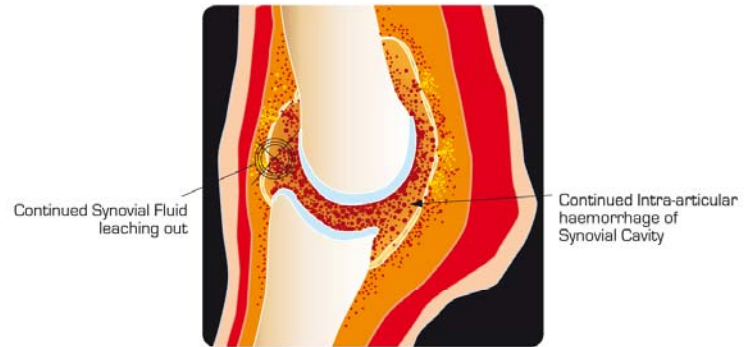
OSTEOARTHRITIS – The Ailment

- Is a common condition that can have a significant impact on the quality of life of animals and humans alike.
- Is a progressive condition which becomes a self-perpetuating illness leading to cartilage erosion, pain, inflammation and restriction in movement.
- Is triggered through trauma to the joint either from general wear and tear, surgery, reaction to medication or obesity.
- The earlier that the inflammatory cycle and joint damage is halted the better the long term prognosis.

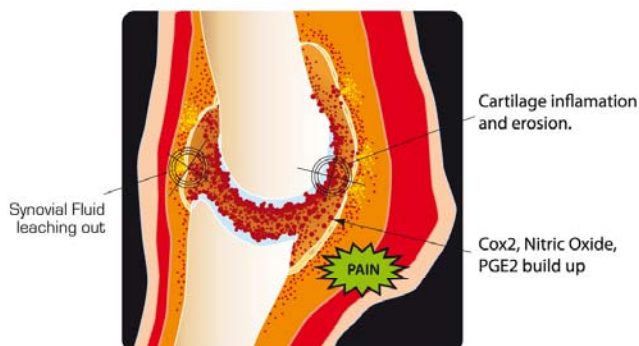
Below is a breakdown of the ailment and the degenerative process a joint goes through and the areas required for complete joint treatment.



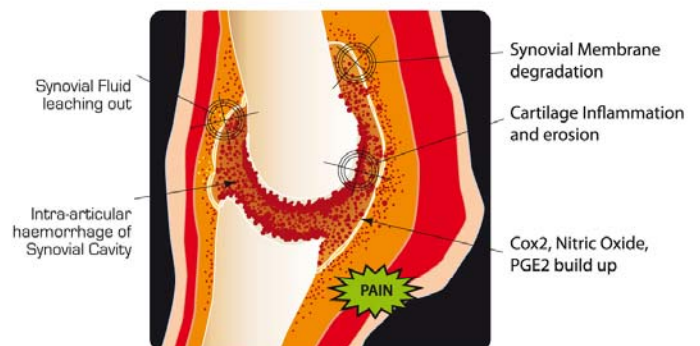
Step 1: Trauma to cartilage or minor tearing of the synovial membrane with haemorrhage into the joint space initiates the inflammatory cycle. Arachidonic acid is released and prostaglandin [PGE-2] is formed through a metabolic cycle including cyclo-oxygenase (COX-2). Inflammatory cells are attracted into the joint.



Step 2: The joint becomes increasingly hot, swollen and painful as the inflammatory cycle progresses. Cartilage cells and synoviocytes are damaged. The synovial membrane is damaged with synovial fluid leaching out of the joint causing increased swelling and attracting increased numbers of inflammatory cells into the joint.



Step 3: As the damage to the synovial membrane continues synovial fluid loses its viscosity and ability to absorb nutrients and remove waste. The pain sensation increases as PGE-2 levels in the joint fluid increase and the levels of Nitric Oxide (NO) rise. Damage to the synovial membrane and cartilage increases as chondrocytes and synoviocytes continue to die.



Step 4: The synovial membrane is now thin and perforated with increased haemorrhage and inflammatory cell migration into the synovial cavity. COX2, NO and PGE2 build up intensifies creating further erosion and inflammation within the membrane and articular cartilage. Pain increases and mobility decreases as the inflammatory cycle continues and secondary new bone formation continues.