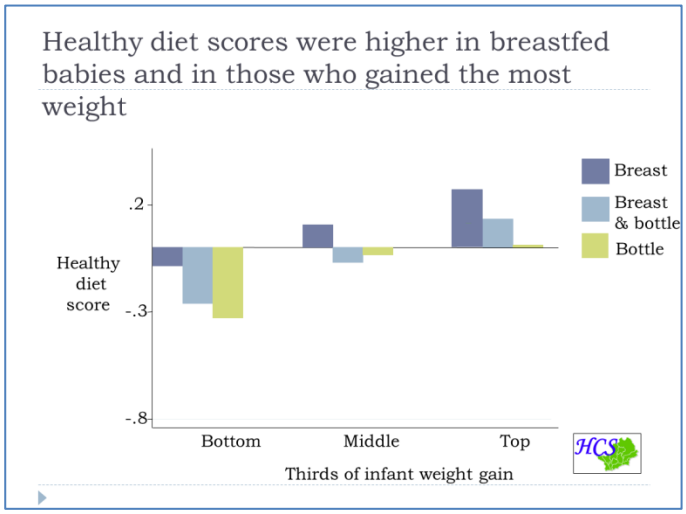
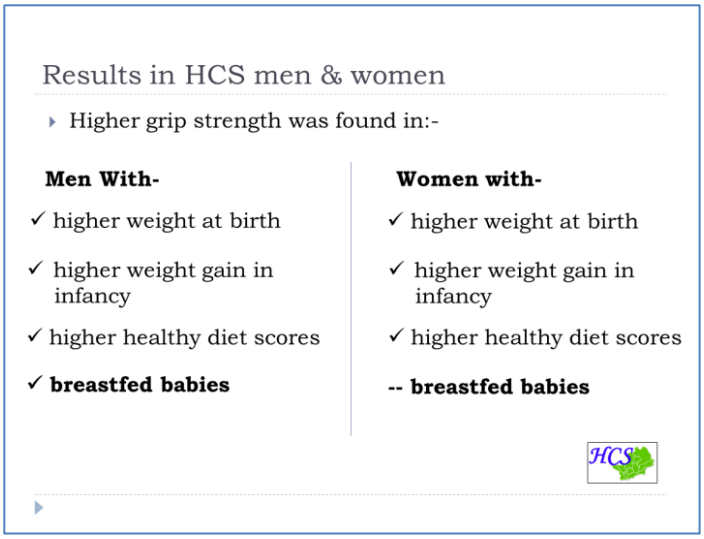
Hertfordshire Cohort Study (HCS)

Dietary Studies

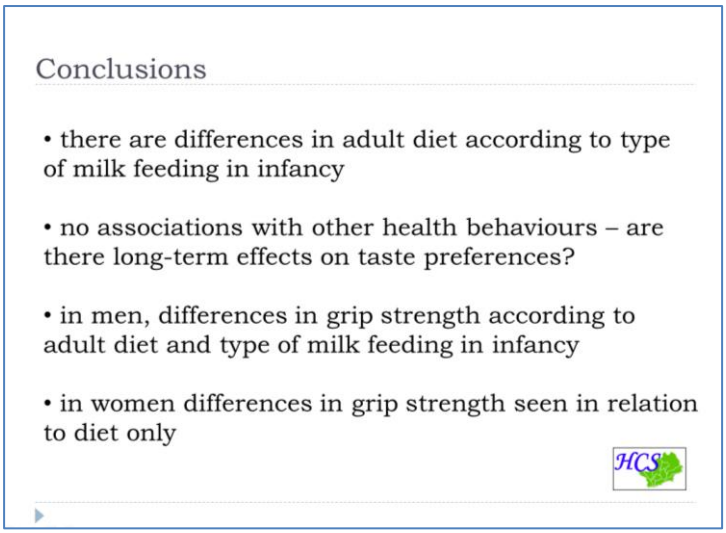


Much of the dietary research in HCS has focused around dietary patterns. A "healthy diet score" was developed to assess each participant's diet. A diet that was considered more healthy included high consumption of fruit, salad, other vegetables, oily fish, wholemeal bread, rice and pasta, alongside lower consumption of white bread, added sugar, full-fat dairy products, chips and processed meat.

When these healthy diet scores were compared with the type of infant feeding, results showed that the participants who were breast fed were more likely to have a healthier adult diet.



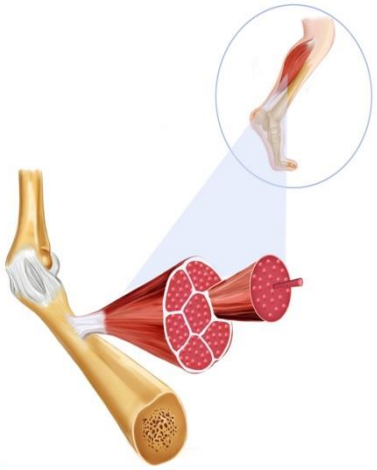
Type of infant feeding has been shown to have an influence on grip strength in older men, such that greater exposure to breast milk in infancy was associated with greater grip strength in adult life. However, the same association was not observed for women in the study.



Type of infant feeding is related to adult diet in both men and women but not to other health behaviours such as smoking, alcohol consumption and physical activity. This may suggest there is a connection between infant feeding type and programming of taste preferences in later life.

Type of milk feeding in infancy may have lifelong implications for muscle strength in men.

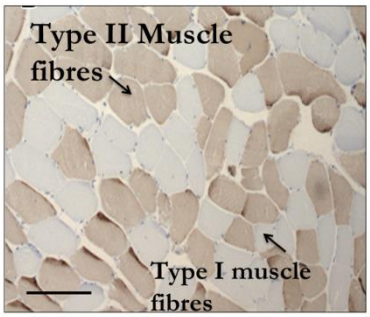
Hertfordshire Sarcopenia Study

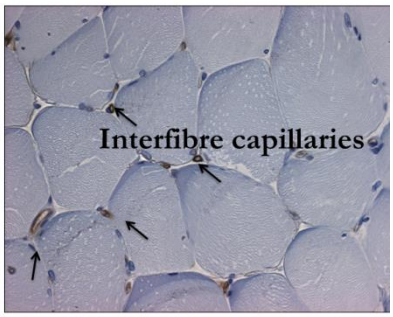


The loss of muscle mass and strength with age is called Sarcopenia. The first wave of our study, into this normal process, included 105 men from East and West Hertfordshire and aimed to investigate muscle in detail by a variety of tests including a muscle biopsy.

We already know that low birth weight is associated with reduced muscle mass and strength in older people. This study aims to find out why.

Muscle Cells

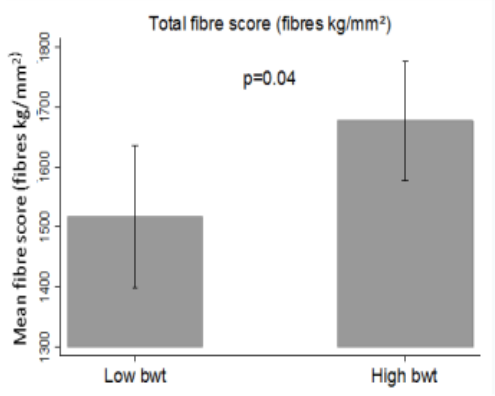




Results show that low birth weight is associated with changes in the structure of muscle, such that the 'fibre score' is reduced. The data collected so far suggest that this may be because smaller babies have fewer fibres, each of which grows bigger. However, we need to include more people in the study to be certain of this.

This study is the first to demonstrate that lower birth weight is associated with a significant decrease in muscle fibre score.

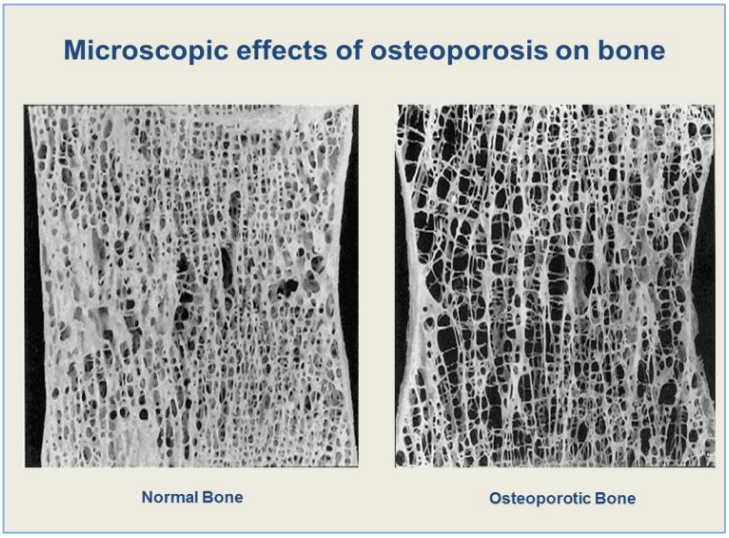
Results- cellular analysis – fibre score



This life course approach to sarcopenia is important. It could lead, in future, to the development of ways to increase muscle mass from an early age, so that the loss which happens naturally in later life does not deplete muscle to a dangerously low level. This may be more successful than the current approach, which is to try to prevent loss in later life. The next stage of this study is underway and includes both men and women. If you haven't already been contacted, we hope to be in touch in the near future.

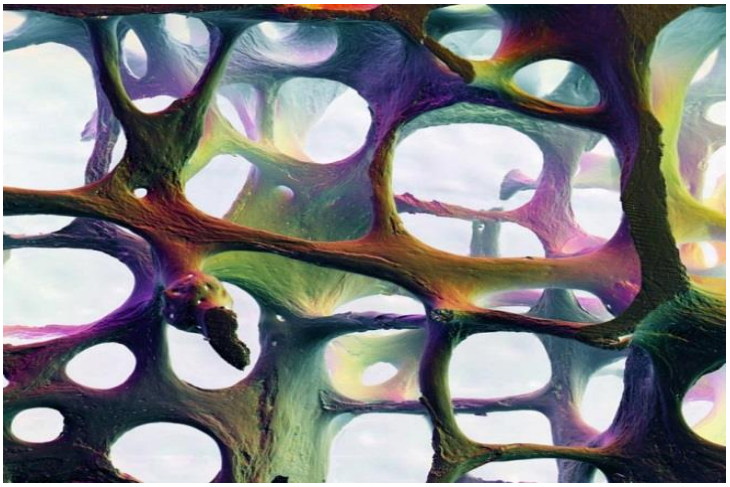
Bones and Joints in Hertfordshire

Osteoporosis



Osteoporosis is a common condition described as the thinning of the bone due to a loss of bone mineral. This bone thinning results in weak and fragile bones which are much more likely to fracture. The Hertfordshire Cohort study has played a role in looking into what factors contribute to the development of osteoporosis in later life. Recent work within the study has involved analysing data from the Hertfordshire participants with relation to early life growth and the onset of osteoporosis in later life.

Some participants of the Hertfordshire Cohort study have, in the past, been asked to have DXA and peripheral quantitative computed tomography (pQCT) scans. These scans gather information about the size, strength and thickness of bones. The information gathered from these scans has shown that the skeleton can be permanently affected by early life environment.



The Hertfordshire cohort study results have shown birth weight and weight aged one affect how big and dense bones are in later life. Poor growth in early life has been shown to lead to narrow bones, which can mean that the risk of breaking a bone in later life is increased. In general the higher the birth weight and weight at one year, the more protected against osteoporosis an individual is in later life.

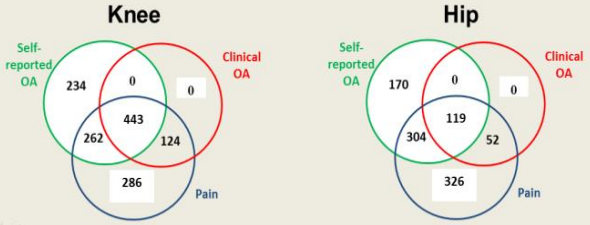
Osteoarthritis

Osteoarthritis is a condition which affects the joints of the body making them difficult to move and often causing pain. The Hertfordshire Cohort Study was recently involved in a European wide project which aimed to study osteoarthritis across larger populations. The idea of this large study was to compare how different lifestyle choices and environments affect osteoarthritis. Each country looked at how osteoarthritis is diagnosed as well as how suffering from this condition affects ease of day to day living.

Approximately 500 participants from the Hertfordshire Cohort Study took part in the UK branch of the project, which is called EPOSA. Each person answered a questionnaire which investigated how much pain they felt at each of their joints and how easily they could complete daily life tasks. The participants also visited a clinic to have their joints examined by a doctor and their medical history taken.

Study Participants

Definition	N (%)
Knee	
Pain	1139 (39.0)
Self-reported OA	965 (33.0)
Clinical OA	570 (19.6)
Hip	
Pain	816 (27.9)
Self-reported OA	611 (20.9)
Clinical OA	171 (5.9)



The questionnaire filled out by our participants asked each person if they believed they had osteoarthritis. This method of diagnosis differed from the diagnosis made at the doctor's visit, which was based on pain and swelling/limitation of joint movement. It was found that participants who said they had osteoarthritis generally had this diagnosis confirmed by the doctor. Suffering from osteoarthritis was shown to decrease people's ability to perform day to day tasks. Italy had the highest levels of osteoarthritis and the German cohort the lowest. This variability may be due to national differences such as climate, health care and lifestyle choices.