New research shines a light on why women live longer than men

January 10 2005

Research by exercise scientists at Liverpool John Moores University (LJMU) may have an answer to the age old question of why women live longer than men.
On average, women live longer than men and women over 60 are now the fastest growing cohort in today's ageing society. LJMU's findings show that women's longevity may be linked to the fact that their hearts age differently to men's and do not lose their pumping power as they get older.

David Goldspink, LJMU's Professor of Cell and Molecular Sports Science explains: "We have found that the power of the male heart falls by 20-25% between 18 and 70 years of age. In stark contrast, over the same period there was no age-related decline in the power of the female heart, meaning that the heart of a healthy 70 year-old women could perform almost as well as a 20 year-old's. This dramatic gender difference might just explain why women live longer than men."

The results are based on the findings of the largest study ever undertaken on the effects of ageing on our cardiovascular system. Since the study began two years ago, Professor Goldspink and a team of scientists at LJMU's Research Unit for Human Development and Ageing have examined more than 250 healthy men and women between the ages of 18 and 80 years.

By choosing only healthy individuals, the scientists have been able to look at the ageing process without the added complications of diseases

which tend to increase as we get older.

Professor Goldspink says: "By simultaneously studying both men and women we have been able to look for either similarities or differences between the two sexes as we get older. We now have a much clearer holistic picture of changes that take place in the human body throughout our life cycle."

The good news is that men can improve the health of their heart simply by taking more regular exercise. In a related study, Professor Goldspink found that the hearts of veteran male athletes (50-70 years-olds) were as powerful as those of inactive 20 year-old male undergraduates.

He explained: "The 20-25% loss of power in the ageing male heart can be prevented or slowed down by engaging in regular aerobic exercise. So, if men work at it, they can preserve the power and performance of their ageing hearts."

But women can't sit back and take it easy; they need to take regular exercise to prevent their leg muscles becoming smaller and weaker as they get older

Professor Goldspink is now calling for a major public campaign to inform people about how much and what kind of exercise they should undertake to age more healthily.

He concluded: "If the Government white paper, 'Choosing Health' is to be effective, the public need to receive better information and advice that is based on strong scientific evidence. Once we can tell them precisely what health benefits they can gain in response to different levels of physical activity, they can then make a realistic and informed choice for themselves".

The research process

· Each volunteer taking part in the ageing and cardiovascular system research underwent five hours of non-invasive tests, focusing on three key aspects of our cardiovascular system.

· First, Tom Reilly, Director of LJMU's Research Institute for Sports & Exercise Sciences, and his team measured body composition to establish bone density, muscle mass and the amount and distribution of body fat in each individual.

· Then Professor Goldspink's team measured blood pressure, how fit each person was and in particular how powerful their hearts were at rest and when exercising to their limits on a treadmill.

· During the final phase of tests, heart performance was measured. Dr Keith George used ultrasound to measure the size of the chambers of the heart, the thickness of its muscular walls and its filling and emptying actions. Professor Tim Cable's team studied the movement of blood out of the heart through the arteries to the muscles and skin of the limbs.

· The resulting information has produced a very detailed picture on the changes that occur in the cardiovascular system as we age naturally and shows that men and women experience a lot of similar changes as they get older:

o Most men and women become less active and less fit as they grow older, reducing muscle mass and increasing the amount of body fat.

o Blood pressure increases both at rest and during exercise, because the large arteries become stiffer and less elastic as we age.

o Blood flow to the muscles and skin of limbs also progressively

decrease. These changes in the structure of blood vessels occur earlier in men, but women soon catch up after the menopause.

Source: Liverpool John Moores University