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Preventative exercise: It is a long-term project to reduce osteoporosis in the population and the risks of falls and fractures¹.

The Vadstena Project

- bone hard struggle for a good skeleton

Physical activity, preferably weight-bearing exercise, is good preventative treatment against osteoporosis. However, it takes a while before the exercise can increase the bone density, as Ann-Charlotte Grahn Kronhed's research in the Vadstena Project shows.

Text: Birgitta Balenstam Lindgren Photo: ***² Agman

Sixteen years since the start of the project the researchers in the Vadstena Project are seeking funds from Forskningsrådet (the research council) in south east Sweden (FORSS). The money is needed to follow up the ten-year project for the prevention of osteoporosis and the risk of falls and fractures.

Positive effects of physical activity on bone density, fewer forearm fractures and a somewhat reduced number of trochanteric hip fractures compared with the control municipality became apparent at the ten year follow up in 2001. Then a large number of people at risk had had the opportunity to exercise twice a week with aerobics/calisthenics and weight-bearing exercise at the health centre. However, no improvements were observed³

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Wants to carry out further research. Ann Charlotte Grahn Kronhed works as a clinician but would like more time for R & D.

in the number of cervical hip fractures. Now the researchers want to investigate how things are with the 2005 effects.

“We hope to be doing the research in the autumn if luck is on our side,” says Ann-Charlotte Grahn Kronhed.

She is physiotherapist in primary care in Vadstena. Organisationally, she is among the paramedics in Rehab Väst. In 2003 her doctor's thesis was on the research studies connected with the Vadstena Project.

¹ Translator's note: Text under pictures appears in italics.

² Translator's note: Owing to poor quality of the scanned source text I am unable to make out the name here and have inserted *** to denote this.

³ Translator's note: Throughout this text I have followed the source text exactly. Where e.g. there is a break for a picture I have inserted '[picture]' and have continued any interrupted sentence in the order it appears in the document.

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The little medieval town on the shores of Lake Vättern in the province of Östergötland has 7,700 inhabitants, many of them elderly. Many move here when they retire, so that they can live in a calm beautiful environment.

The ten-year project 'Vadstena, a bone hard municipality' started as a political initiative when epidemiological results showed that hip fractures were becoming increasingly common in Östergötland. An intervention began to reduce the risks of osteoporosis and falls.

Ann-Charlotte Grahn Kronhed believed immediately in the project, in which she participated together with a district medical officer, a district nurse and a dietician. The lab staff became involved throughout all the osteoporosis investigations. The head of R&D for primary care, the physiotherapist and associate professor Margareta Möller and two specialist doctors from Linköping's University Hospital formed part of a managerial body during the period of the project.

The head pharmacist in Vadstena was involved in order to get people at risk to purchase and take calcium tablets.

"We went out to all areas in the community, e.g. workplaces. We gave out information on the need for physical activity and a satisfactory calcium intake in order to maintain a strong skeleton in later years. We talked to older people about how good shoes, spikes, crutches and sticks can reduce the risks of falling."

Ann-Charlotte Grahn Kronhed, who had just completed her supplementary education, continued with her research studies associated with the project with Margareta Möller as supervisor.

In a study where the participants were healthy 70-75 year olds, Ann-Charlotte showed that it was possible

[picture]

Learned women. The statue of Saint Birgitta stands in Vadstena .

Ann-Charlotte Grahn Kronhed's thesis is entitled Community Based Osteoporosis Prevention: Physical activity in relation to bone density, fall prevention, and the effect of training programmes. The Vadstena Osteoporosis Prevention Project.
Reservation: lotta.grahn-kronhed@liu.se⁴

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[picture]

No rest: A moment's aerobics/calisthenics before body building with apparatus.

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About Osteoporosis on CD

Ann-Charlotte Grahn Kronhed has been involved in producing a CD about everyday orthopaedic practice, which provides information on osteoporosis and advice on

⁴ Translator's note: Owing to the poor quality of the scanned source text I was unable to be sure of this email address but I have included it as I read it.

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exercise for brittle bones. Everyday orthopaedic practice can be ordered free of charge from pharmaceutical company Nycomed at: infosweden@nycomed.com

to improve their balance with nine weeks of group exercise. The difference to the control group was obvious.

People in the 40-70 age range with low rates of bone density discovered when screening of the forearm, were invited to participate in a study. 30 of them also had the measurement taken for bone density in the lumbar region and hips.

Half participated in a physiotherapy exercise programme twice a week whilst the remaining people carried on as usual. After one year, new bone density measurements were taken. It was somewhat improved in the trochanter major, which has a large amount of spongy bone. Also, the ability to balance and the condition was improved in participants of the study group. However, the material was considered to be too insignificant for reliable conclusions.

For Tage Johansson, one of the study group members who was in the study for the full ten years, the Vadstena Project came at the right time, says Ann-Charlotte Grahn Kronhed. (See the interview with him on the next page). The project increased the awareness of the inhabitants of Vadstena as to how important it is to exercise in order to maintain a strong skeleton.

Patients are now asking for an exercise programme. They have learnt that they must keep themselves active with physical activity in order to keep themselves healthy. As a result of my thesis, I can confidently say that weight training reduces the risk of osteoporosis, even if there is a significant hereditary component to being affected.

At the health centre in Vadstena there are still plenty of opportunities for taking part in group physical activities. Some of the participants in the original study group continue to exercise two mornings a week in the well-equipped gym. Here there are special exercise groups for those who have risk factors such as high blood pressure, diabetes or are overweight. Then, in many cases they can be moved on to Korpen (the Swedish Sport for All Association) aerobics/calisthenics. For those using zimmer frames there is a 'sit and stand group'. The health centre is open in the evenings for various exercise activities. Participants can purchase training cards or pay at each visit.

Ann-Charlotte Grahn Kronhed has continued to work in her clinical post in Vadstena since her dissertation. But she wishes that it were possible

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Soon eighty years of age: Tage Johansson in red sweater, exercises twice a week and has never felt so good.

for her to devote more time to R&D, in order to carry out supervision in the research project and be able to familiarise herself with the development of new research findings. For four R&D weeks this academic year she will be evaluating the Skogsfrid Study in Linköping.

“I am going to carry out a one year follow up of an intervention with weight training for women with established osteoporosis. All the women in the study have previously had a fracture as a result of their brittle bones. They have been selected at the osteoporosis clinic in Linköping.”

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[picture]

The past ten years have been the best of my life

Tage Johansson will be 80 in August. He has been involved in the Vadstena Project from the beginning. After 11 years he is still going to aerobics/calisthenics and exercising at the gym two mornings a week.

“I read about the project in the newspaper in 1989. I really wanted to take part in the research into brittle bones. There were several family members with a fragile skeleton on my mother’s side. Her brothers’ backs became very crooked in old age, after working in agriculture and as blacksmiths.”

Tage Johansson’s bone density was very low in his forearm measurement in 1989. He was 64 years old and had been retired for six years after working for many years manufacturing refrigerators at Electrolux.

Ill health had meant that a significant part of his stomach had been surgically removed. A new cardiac valve had also been necessary. In addition, he had to take insulin for his age-related diabetes.

As a 64 year-old, Tage Johansson was a heavy smoker in extremely poor physical condition. He realised that

Osteoporosis

Epidemiological research shows that every other Swedish woman and every fourth Swedish man over 50 will have at least one brittle bone fracture. The number of brittle bone fractures has multiplied in the last 50 years. The social cost of these fractures is high. A patient with a hip fracture consumes more days of care than patients diagnosed with any condition other than strokes.

Certain brittle-boned people have such a weak skeleton that they could have a vertebral compression even with just day to day stress.

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Since the time of the project Ann-Charlotte Grahn Kronhed has had certain collaboration with the shoe shop in Vadstena. To get help to try out stable and good shoes is an important part of the prevention of falls. Furthermore, in Engholms shoe shop there is a large range of anti-slip devices and spikes. There is even a placard to this effect on the road outside.

“It is important for the customer to try out the right spikes. Certain ones fit all shoes and boots, whilst others require a lighter and thinner version. One type has tyre studs and can be re-studded if and when they are worn down,” says the owner, Bengt Andersson.

He and Ann-Charlotte are helping to try out the best version of spikes for a customer.

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he had to change his lifestyle. He began by walking and was forced to sit on each park bench that he passed in the beginning.

He stopped smoking – largely because of the grandchildren, and started cycling in addition to spending time on the exercise that formed part of the project.

He took his calcium tablets every day.

His bone density was measured again in 1999 and showed the same value as ten years previously. Something that Ann-Charlotte Grahn Kronhed was extremely satisfied with in 74 year old Tage.

Bone density begins to diminish after 60 in men. The reduction in bone density affects women somewhat earlier than this, in connection with the menopause.

Tage Johansson thinks that it is natural to take personal responsibility for your health. He says that he feels better now at 80 than he did when he first retired 22 years ago.

He spreads his positive outlook on life in the exercise group and cheers up his fellow exercisers with drinks and home baked cakes (his wife's) after the aerobics/calisthenics session once a month.

“I woke up in the night and was almost moved when I thought how well I feel now. The past ten years have been the best of my life thanks to Ann-Charlotte, a good doctor and my wife.”