

**OSTEOPOROSIS TREATED WITH LOW DOSE  
VIBRATION  
PROFESSOR WARWICK BRUCE**

Professor Warwick Bruce has recently been using Low Dose Vibration (Juvent) in the treatment of osteoporosis. He has also applied this technology to laboratory studies.

Osteoporosis is a disease characterized by low bone mass and deterioration of bone structure that causes bone fragility and increases the risk of fracture.

The diagnosis of osteoporosis is made after bone density studies which are given a T score and the condition is assessed by the number of standard deviations from normal. Minus 2.5 standard deviations from normal is osteoporosis from minus 1 to minus 2.5 is osteopenia.

Nearly 2 million Australians have osteoporosis and this is expected to rise to 3 million in 2021. Approximately every 8 minutes someone is admitted to an Australian hospital with an osteoporotic fracture. Osteoporotic fractures will occur in 30 to 50 percent of women and 15 to 30 percent of men. One in two women and one in three men over 60 will sustain an osteoporotic fracture.

The cost of osteoporotic fractures in Europe is 13 billion Euros per year. In France there are 118,000 fractures of the wrist, hip and humerus from osteoporosis not including spine fractures per year. In the United States in 2003 there were 2 million osteoporotic fractures costing 12.96 billion US dollars.

Osteoporotic fractures can cause pain, deformity, loss of independence and lead to premature death.

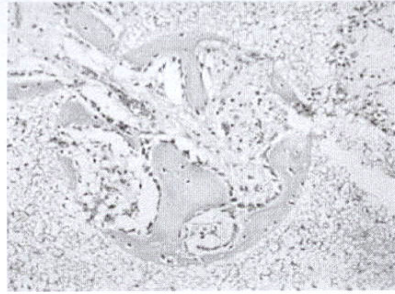
Post menopausal women lose 2 percent of bone mass a year and astronauts lose 2 percent of bone mass a month.

Professor Bruce has been using Juvent Low Dose Vibration for the treatment of osteoporosis for the 30 to 40 percent of people who cannot tolerate drug treatment and for those who won't take drugs. (Figure 1). The Juvent machine is a vibrating machine which has small vertical accelerations which vibrate the axial skeleton and 20 minutes a day is all that is required. The advantage of the vibration is that not only does it improve bone density but it increases the strength of Type 2 A muscle fibres (postural muscle) which will have a beneficial effect for patients.

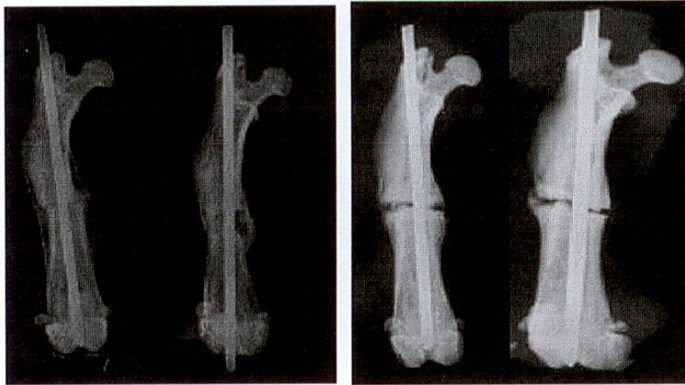
In post menopausal women there has been a 2.2 percent increase in hip density and 1.5 percent increase in spine bone density per year with Juvent. In children with osteoporosis from cerebral palsy there has been a 17 percent increase in bone mineral density in half a year. In premenopausal women with osteoporosis there has been a 3 percent increase in cortical bone density and a 2.2 percent in spine cancellous density and a 4 percent increase in muscle mass in the spine.

We have looked at it in the laboratory in a critical size defect in sheep treated with Juvent and shown new bone formation is accelerated with the Juvent machine. Figure 2.

Figure 2



Also using a rodent fracture model we have shown acceleration in fracture healing using the Juvent machine. Figure 3.



In conclusion, Juvent Low Vibration Technology offers a new treatment in osteoporosis and sarcopenia, which is part of aging. It has no side effects and has equal benefit to drugs as well as improves muscle strength