**Marodyne & Osteoporosis Prevention: Updated Research & Evidence**

It’s no secret that osteoporosis is a global epidemic. Every year, millions of people have to live with the limitations brought on by osteoporosis - including almost one million Australians.[[1]](#footnote-1) Globally, it is the leading cause of fractures to the hip, spine and wrist for individuals over the age of 50, with 30% of women and 20% of men in this age range predicted to experience an osteoporosis-related fracture in their lifetime[[2]](#footnote-2),[[3]](#footnote-3).

With both osteoporosis and the resulting fractures shown to be linked to a lower quality of life[[4]](#footnote-4), health status, impaired physical function and increased pain[[5]](#footnote-5), it is clear that simple and effective strategies to manage osteoporosis at every age are in critical need. With the Marodyne low-intensity vibration device gaining global popularity over the recent years due to being medically certified to prevent osteoporosis and osteopenia, here is an overview of its mechanism of action, evidence, and comparison to other preventative therapies to date.

**Exercise For Osteoporosis**

Weight-bearing exercise is a key treatment and prevention method for both postmenopausal and age-associated osteoporosis.[[6]](#footnote-6) Incorporating various forms of physical activity into our daily lives is shown to improve muscle function and offset age-related muscle morphology changes.[[7]](#footnote-7) To best benefit from the results, the National Osteoporosis Foundation recommends skeletal loading with high and low-impact weight-bearing exercises for at least 30 minutes per day, 5–7 days a week.[[8]](#footnote-8) It is a promising non-invasive and non-pharmacological method of regulating both osteoporosis and osteopenia.

Unfortunately, intense physical activity is often not a realistic nor achievable approach for those aged over 50, or who have underlying musculoskeletal or metabolic conditions. In these instances, exercise may simply not be possible, or could cause further harm.

**Medication For Osteoporosis**

Another common management tool for osteoporosis is through pharmacological interventions. While medicines such as Fosamax show promising results in helping reduce the prevalence of fractures, they are not without their limitations. Research has found osteoporosis medication to be associated with poor patient adherence[[9]](#footnote-9),[[10]](#footnote-10) leading to poor outcomes. A study examining the attitudes and treatment patterns of Australian GP’s in treating osteoporosis found that in over 80% of cases where patients ceased their medication, prescriptions were not being followed up or continued, placing these people at risk of further fractures and suggesting that osteoporosis was undertreated and underdiagnosed.[[11]](#footnote-11) In addition, adverse effects[[12]](#footnote-12),[[13]](#footnote-13) can accrue with long-term use of osteoporosis therapeutic medications[[14]](#footnote-14). This means that for our ageing populations, we need better treatment options to support healthy bone density.

**Marodyne LiV For Osteoporosis**

The Marodyne LiV is a modern device that has been recognised by the Royal Osteoporosis Society as a safe and effective tool for the prevention of osteoporosis and the improvement of bone health. The mechanism of action behind the Marodyne is grounded in the principles of exercise, whereby the musculoskeletal system responds to ground-reaction forces, bombarding a person’s bone tissue with high and low frequency mechanical signals. The ability of these mechanical signals to increase musculoskeletal mass and quality is multifactorial, simultaneously repressing the systems involved in the formation of adipose tissue (fat), while also promoting the construction of bone.[[15]](#footnote-15) By increasing both muscle and bone mass and strength, exercise is able to reduce the incidence of bone fracture.

The key component of exercise — mechanical signals — is what promotes the generation of bone and muscle, while limiting formation and expansion of fat mass. It is also what has led to the formation of the new vibration strategy to treat osteoporosis through Marodyne.

**Low-Intensity Vibration vs. Whole Body Vibration**

Low intensity vibration (LiV) has been found to promote the construction of healthy bone and muscle, and inhibit the formation of fat, improving bone outcomes in patients.[[16]](#footnote-16) Whole body vibration (WBV) between 20-90Hz in animals has been found to promote the generation of bone and muscle, preventing and reversing osteoporosis.[[17]](#footnote-17) Moreover, 30Hz vibrations have been shown to build bone and muscle in the hip and spine of young women with osteoporosis[[18]](#footnote-18), promote volumetric bone density in the proximal tibia of children with conditions such as cerebral palsy[[19]](#footnote-19), enhance bone quality in adolescents with idiopathic scoliosis[[20]](#footnote-20), and help protect balance control in those subject to chronic best rest.[[21]](#footnote-21)

WBV devices are currently accessible to the general public, often being a paid feature of gyms as the vigorous vibrations can stimulate the growth of muscles. While effective for those who are fit and strong, WBV machines can be seriously damaging to those with bone conditions like osteoporosis. This is where a purpose built LiV device is crucial.

The Marodyne LiV provides low intensity vibration, low acceleration and low level vibration which is transmitted at a high frequency to the person standing on it. This type of vibration mimics the small high frequency contractions exerted by muscles onto the bone. It is safe to use at home or in-clinic and provides a safe and suitable therapy for those with weaker bones. Departing from the typical ‘more is better’ attitude to exercise and treatment, several groups have reported that small mechanical signals that are high frequency and low-intensity vibration are effective to construct bone[[22]](#footnote-22),[[23]](#footnote-23) and suppress the formation of adipose tissue.[[24]](#footnote-24),[[25]](#footnote-25)

Doctor Clinton Rubin Ph.D., is a distinguished State University of New York professor and a global authority on vibration therapy, whole body vibration platforms and their impact. He recommends a minimum of 10 minutes per day, citing that the most important component for success is not duration, but consistency. Using the Marodyne LiV every single day is a more important factor than the time for which it is used. In fact, growing evidence suggests that the incorporation of multiple cycles of mechanical signals within a given day, separated by periods of rest, can increase the beneficial bone-building effects. [[26]](#footnote-26)

**Break Up With Osteoporosis**

With LiV promoting increased bone mass and quality, contributing to bone strength and a reducing risk of fracture, in today’s market, Marodyne presents a simple, easy and effective solution for osteoporosis. It can be utilised by all age ranges, all physical abilities, without the need for repeat prescriptions or GP visits, and without strenuous or unmanageable exercise.

Marodyne LiV is available exclusively from Rehacare. To purchase the device, or for any questions, please contact **us** on **1300 653 522**.

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