

# CASE STUDIES

## J.A.

Age: 56

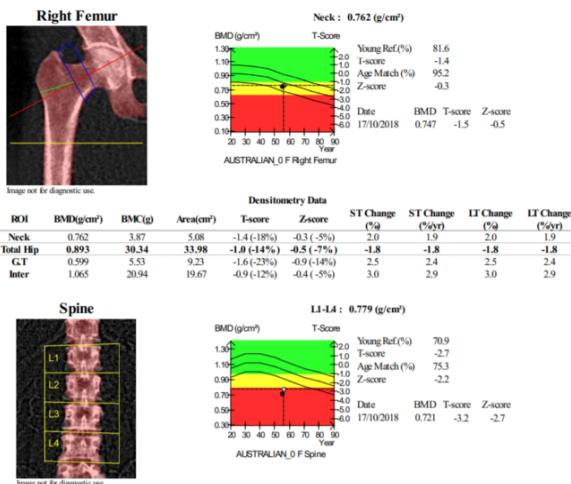
Training: 2 x Onero per week.

## Results:

Our client increased her lumbar spine Bone Mineral Density (BMD) by 8%, improving her T-score from -3.2 to -2.7. She also increased her femoral neck BMD by 2%, improving that T-score from -1.5 to -1.4.

## Functional Outcomes:

She improved her muscle mass by over 1% and her sit to stand time improved by 18%, both of which will improve her function and help prevent her from falling. She improved her balance, as demonstrated by a 45% improvement in her tandem walk score. Impaired balance is a major risk factor for falling. Her functional mobility and walking ability improved by 12% as measured by the Timed Up and Go test. Her kyphosis (curvature of her upper back) also improved by 10%.



**N.A.**

Age: 58

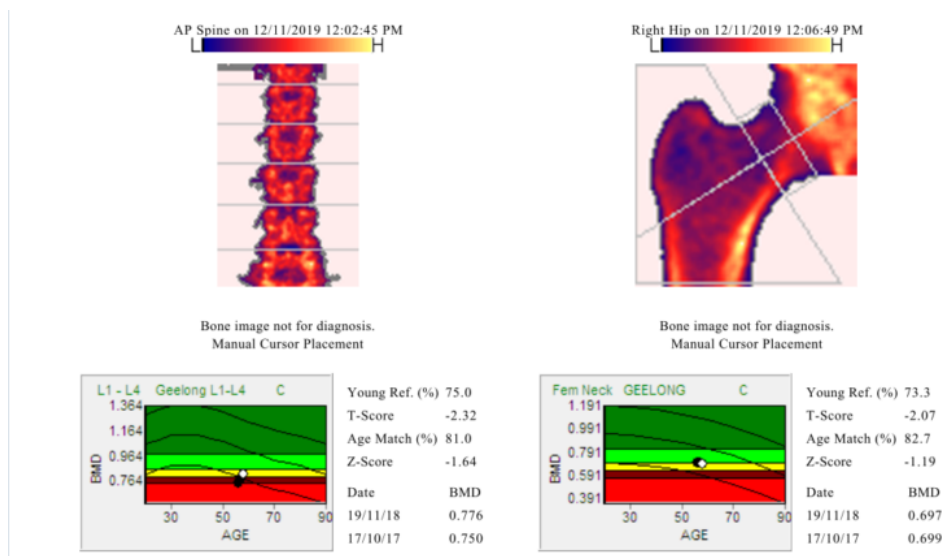
Training: Onero twice per week (second year of Onero training)

## Bone Results:

The client increased the bone mineral density of her lumbar spine by 6.05%, improving her T-score from -2.72 to -2.32. She has reversed the diagnosis of osteoporosis for the lumbar spine which is now in the osteopenic range.

## Functional Outcomes:

Her functional reach increased by 10.81% and her Timed Up and Go test improved by 5.10%. These tests measure dynamic balance, functional mobility, and coordination and are great at predicting a reduction in falls risk. Her back extensor strength test improved by 2.05% and the timed sit to stand improved by 10.38% signifying increased back and leg strength and endurance. Studies have shown that improvements in leg strength and endurance also lower the risk of falls, while improvements in back extensor strength are associated with a reduced risk of vertebral fractures. These improvements in bone mineral density, balance, agility, and strength greatly reduce her falls and fracture risk.



# J.A.

Age: 64

Training: Onero twice a week for 12 months.

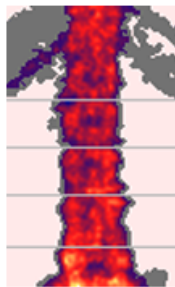
## Results:

Our client maintained her bone density in her lumbar spine (LS) and had an increase in the femoral neck (FN) by 4.4%.

## Functional Outcomes:

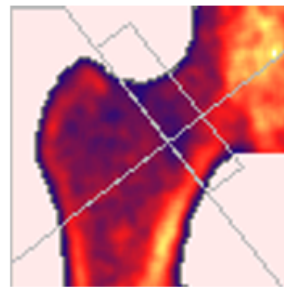
She increased her functional reach by 15.15%, and her mobility by 10.19% measured via the timed up and go test. Her tandem walk time improved by 28.48% and her back extension strength by 43.19%.

AP Spine on 19/04/2018 9:00:56 AM

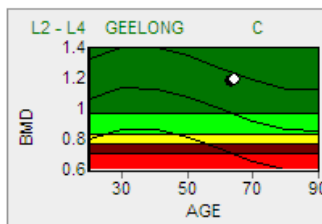


Bone image not for diagnosis.  
Manual Cursor Placement

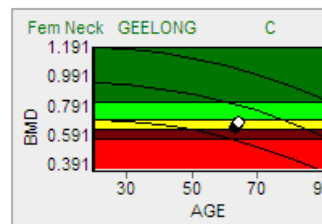
Right Hip on 19/04/2018 9:05:16 AM



Bone image not for diagnosis.  
Manual Cursor Placement



Young Ref. (%) 108.1  
T-Score 0.67  
Age Match (%) 122.9  
Z-Score 1.67  
Date 19/04/17  
BMD 1.181



Young Ref. (%) 71.8  
T-Score -2.18  
Age Match (%) 84.8  
Z-Score -1.00  
Date 19/04/17  
BMD 0.648

# C.N.

Age: 62

Training: Onero twice a week for 12 months.

## Results:

The client increased the bone mineral density of her lumbar spine by 8.9%, improving her T-score of -4.04 to -3.57.

## Functional Outcomes:

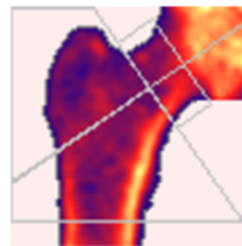
Her dynamic balance and functional mobility improved by 4.99% in the functional reach test, 7.30% in the timed up-and-go test and 12.69% in the tandem walk test. She also added an extra 471g of lean body mass indicating a 1.38% increase in muscle. Functional leg strength was demonstrated by an increase of 5.84% in the sit-to-stand test and her back extensor strength improved by 14.29%. These improvements in bone mineral density, balance, agility, and strength greatly reduce her falls and fracture risks.

AP Spine on 19/06/2019 2:26:54 PM

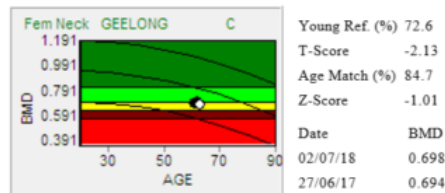
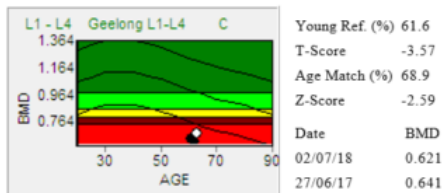


Bone image not for diagnosis.

Right Hip on 19/06/2019 2:32:04 PM



Bone image not for diagnosis.  
Manual Cursor Placement



# C.C.

Age: 59

Training: Onero twice a week for 14 months .

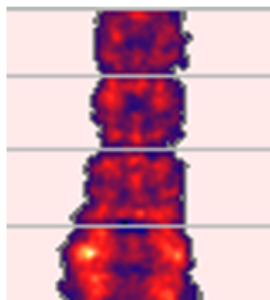
## Results:

The client had an increase in her lumbar spine (LS) by 5.0%; going from a T-score of -2.45 to -2.16.

## Functional Outcomes:

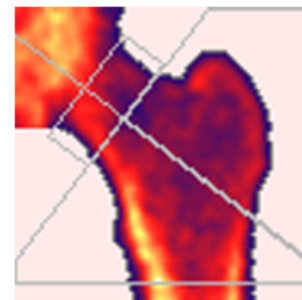
Her timed up and go improved by 2.03% which is a measure of gait speed and agility.

AP Spine on 14/01/2019 2:25:27 PM

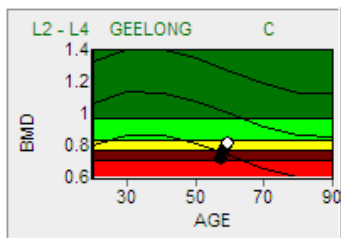


Bone image not for diagnosis.  
Manual Cursor Placement

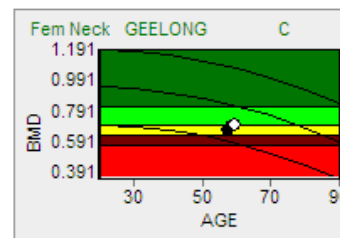
Left Hip on 14/01/2019 2:30:14 PM



Bone image not for diagnosis.  
Manual Cursor Placement



Young Ref. (%) 73.8  
T-Score -2.16  
Age Match (%) 81.0  
Z-Score -1.43  
Date BMD  
29/11/17 0.773  
07/12/16 0.713



Young Ref. (%) 73.9  
T-Score -2.02  
Age Match (%) 84.2  
Z-Score -1.07  
Date BMD  
29/11/17 0.692  
07/12/16 0.663

# M.C.

Age: 65

Training: Onero twice a week for 12 months.

## Results

The client had an increase in her Lumbar spine (LS) bone mineral density of 4.63% going from a T-score of -2.87 to -2.57. Her lean mass also improved by 5.9%, which is another great predictor in reducing falls in older adults.

## Functional Outcomes

The clients back extensor strength test increased by 27.41 %. Studies have shown that increased back extensor strength is associated with reduced risk of vertebral fractures and decreased thoracic kyphosis (posture). Her functional reach increased by 7.69% which is a measure of dynamic balance. Impaired balance is a major risk factor for falling and an increase in balance is therefore an important element of functional mobility in populations at risk for falls and fractures. Additionally, her functional mobility and walking ability improved by 4.68% measured by the Timed Up and Go test. This test is great in predicting a reduction in falls risk in older adults.

