Dual-Energy X-ray Absorptiometry (DXA, DEXA)

Gold standard for osteoporosis screening, diagnosis, and monitoring of therapy
Monitors changes over time and predicts risk of future fractures (test used in most studies)
Quick and acceptable to patients and relatively inexpensive
Very low dose of radiation (similar to daily background radiation exposure)

Measures bone mineral content (BMC, in grams) and bone area (BA, in square centimeters) used to calculate BMD by dividing BMC/BA or gm/cc².

**T-score**  
\[
\frac{\text{BMD of pt} - \text{BMD of young-adult population}}{\text{SD of young-adult population}}
\]
(SD=standard deviation, pt=patient)

**Z-score**  
\[
\frac{\text{BMD of pt} - \text{BMD of age- and sex-matched population}}{\text{SD of age- and sex-matched population}}
\]

World Health Organization definitions are based on BMD as measured by DXA

<table>
<thead>
<tr>
<th>T-score</th>
<th>Osteoporosis</th>
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</thead>
<tbody>
<tr>
<td>≥1.0</td>
<td>Normal</td>
</tr>
<tr>
<td>−1.0 to −2.5</td>
<td>Osteopenia</td>
</tr>
<tr>
<td>≤2.5</td>
<td></td>
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