



## Biomechanical Model of bone

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### Abstract

This research deals with how bone growth occurs with different situation like stress, temperature, hormonal effect phenomenon and bone remodeling process in this situation.

**Keywords:** Microcracks; Bone Remodeling; Osteoclastic Activity and Osteoblastic Activity

### Microcracks theory

This theory deals with stress related bone remodeling. In case of the stress Microcracks appear on the bone and lead to imbalance of osteoblastic and [1] osteoblastic activity leading to the activation of osteoblastic cells and leading to the growth of the bone in pattern of Microcracks appear [2].

### Thermodynamical bone remodeling

- In thermodynamical model their is three ranges of model [3].
- At higher range of temperature above 45 degree Celsius the Microcracks appear at higher rate than osteoblastic activity so now their is low amount of bone growth and bone remodeling [2].
- At Moderate temperature (25 to 37 degree Celsius) the Microcracks and osteoblastic activity is at faster rate so bone remodeling is faster [4].
- At lower rate temperature (below 25 degree Celsius) their is low appearance of Microcracks so low bone remodeling.
- It also applicable To all the parts and areas of bone [5].

### Hormonal effect phenomenon

Thyroid hormone increases the osteoclastic activity and bone tissue breakdown and parathyroid hormone increases the osteoblastic activity and Both boost bone remodeling in case of normal amount.

In case of abnormal amount can cause the bone pathology.

In case of high amount of parathyroid can cause bone tumor and benign bone tumor showing distribution in different parts of body where bones are located.

### Treatment

Radiation can destroy or parathyroid hormone antagonist can do the same the Same but should be taken for long time.

Side effects: bone growth May be delayed.

Metabolism may be affected.

### Result

Treatment of bone tumor is the parathyroid hormone antagonist and radiation and bone remodeling depends upon the temperature, stress and appearance of Microcracks.

### Discussion

We discussed about bone remodeling model and Treatment of the bone tumor and how it occurs.

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