



## Continuous versus released compressive force on osteoclastogenesis of RAW 264.7 cells

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### Background and rationale

Orthodontic tooth movement occurs by the bone remodeling process through compressive force on the pressure site and also increases cellular activity. Osteoclasts play an important role in this process. However, there are few studies that compare continuous compressive stress and released force on osteoclastogenesis.

### Material and Method

In this study, the compressive force (0.6 g/cm<sup>2</sup>) was applied by the acrylic mass to osteoclast precursor cells to investigate their osteoclastogenesis. RAW 264.7 cells were divided into five groups and cultured for four days in an alpha-MEM medium containing 50 ng of RANKL. The acrylic mass was taken out of the 96 well plates in one group every day in the released forced group (day 1, 2, and 3 respectively) and continued cultured until day 4. On day 4, each group was examined for the number of TRAP-positive multinucleated cells by TRAP staining and counted using a Zeiss fluorescence microscope (Carl Zeiss, Oberkochen, Germany) equipped with a 10X objective by two individuals.

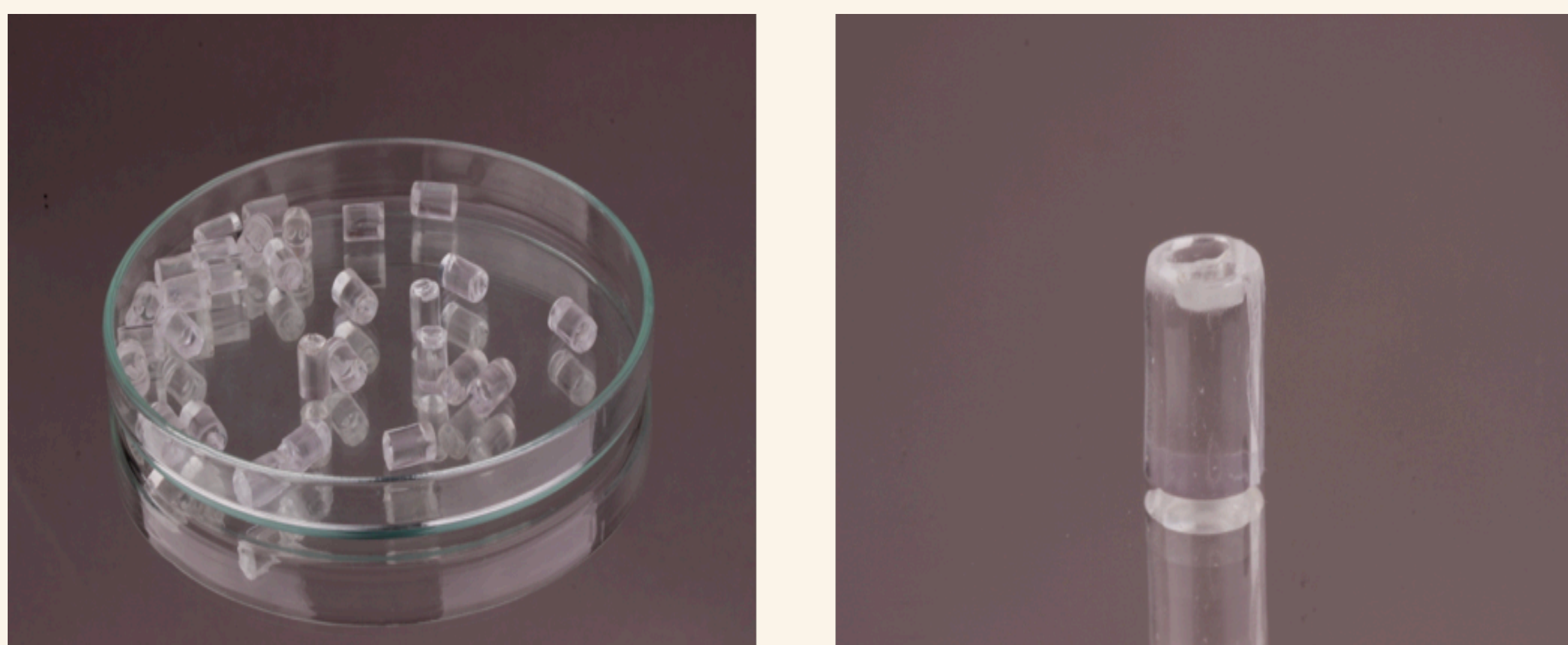


Figure 1: The acrylic cylinder body is made of laser-cut acrylic to fit a 96 well plate.

### Result

The results of this study showed that the released force group before day 4 showed a lower number of TRAP-positive multinucleated cells. The greatest number of TRAP-positive cells was presented on 4 days group.

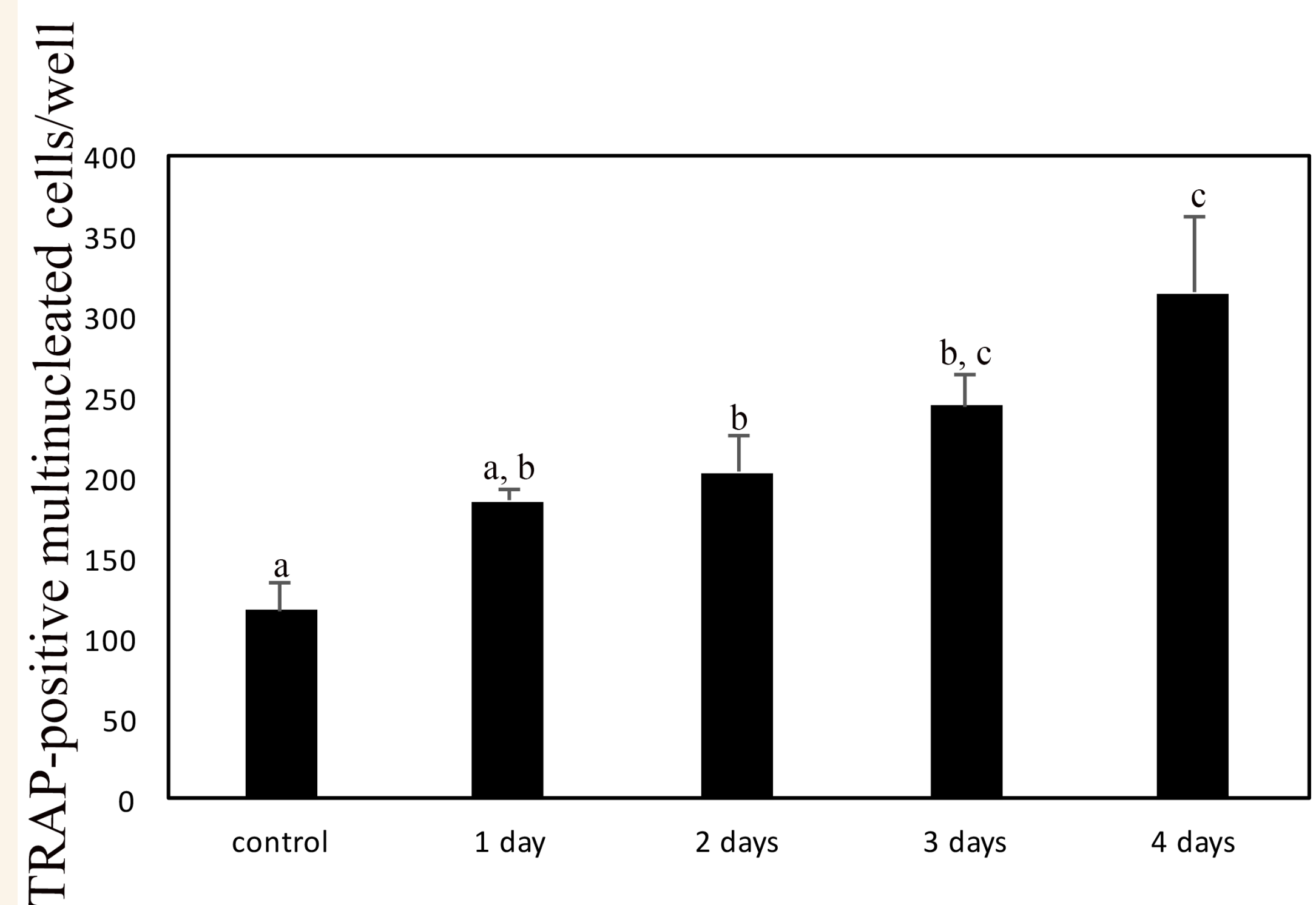


Table 1 :All values are shown as mean ± SD. Significant differences between groups are indicated by different letters (a, b and c;  $P < .05$ ).

### Conclusion

The continuous compressive force increased the number of TRAP-positive cells with a time-dependent.

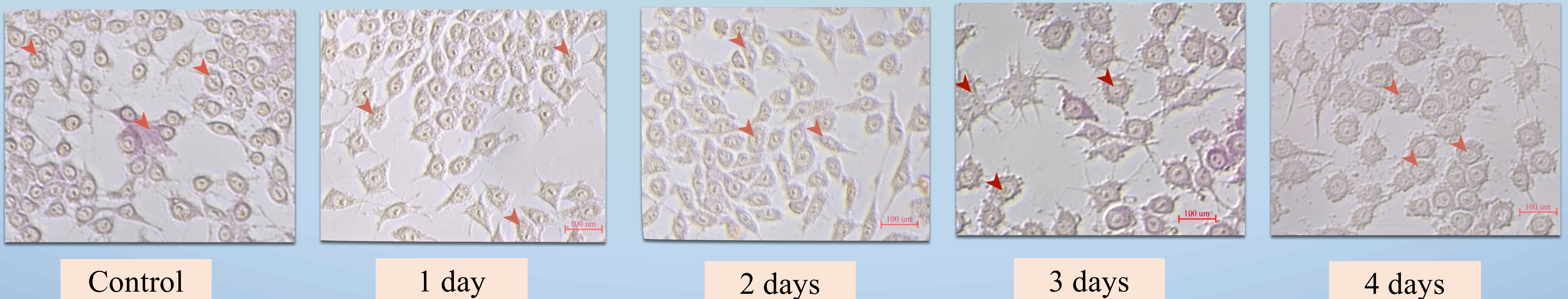


Figure 2 . The red arrows indicate TRAP-positive MNCs.