ARTICLE SUMMARY

CYCLIC LOADING (VIBRATION) ACCELERATES TOOTH MOVEMENT IN ORTHODONTIC PATIENTS: A DOUBLE-BLIND, RANDOMIZED CONTROLLED TRIAL

Dubravko Pavlin DMD, MSD, Ph.D., Ravikumar Anthony MSD, Vishnu Raj DDS, MS, Peter T. Gakunga DDS, Ph.D.

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PURPOSE

- To assess the effect of a defined low-level cyclic loading on the rate of orthodontic tooth movement.

METHODS

- Parallel, double-blind, prospective, randomized, controlled trial.
- Enrolled 45 orthodontic patients (age range 12-40 yrs) with fixed appliances and randomized into two groups.
  - AcceleDent® Group (N=22)
  - Sham Control Group (N=23)
- Patients underwent extraction of maxillary first premolars with maximum maxillary posterior anchorage and at least 3mm of extraction space after initial alignment.
- Cyclic loading was applied to the vibration group for 20min/day using the AcceleDent device, which delivered a force of 0.25N (25g) at a frequency of 30Hz.
- Control group was assigned to the same protocol, but the device could not be activated to vibrate.
- Separate canine retraction was performed on a 0.018 in stainless steel archwire and enmasse retraction with a 0.019 x 0.025 SS archwire.
- Average monthly rate of maxillary canine retraction into an extraction space was analyzed.

RESULTS

- The mean rate of movement was significantly higher for the AcceleDent Group versus the Sham Control Group (Figure 1).
  - 1.16 mm/month vs 0.79mm/month (p=0.05)
- Study outcomes indicated that AcceleDent is safe and convenient for patients' daily use.

AUTHOR CONCLUSIONS

- These results showed that low-level cyclic loading of 0.25N at 30Hz increases the rate of tooth movement when applied as an adjunct to orthodontic treatment.

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SERIES

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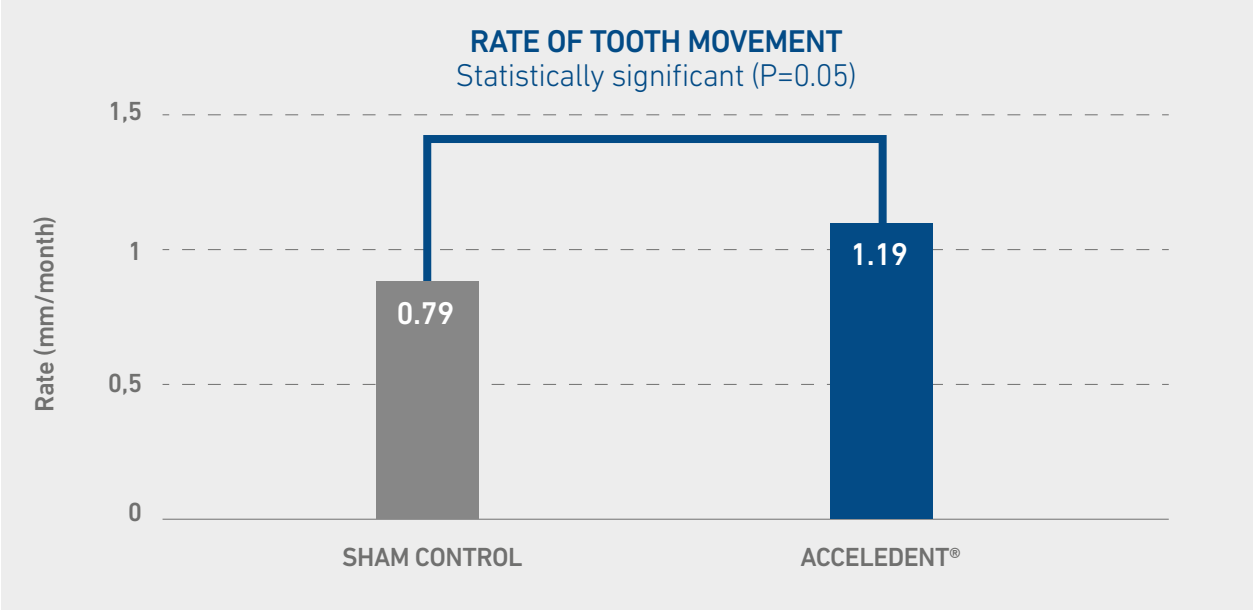

☑ KEY POINT

This peer-reviewed randomized controlled trial demonstrates that AcceleDent accelerates the rate of tooth movement during orthodontic treatment.

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OrthoAccel Technologies, Inc.
1-866-866-4919
sales@orthoaccel.com

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