

**1<sup>ST</sup> & ONLY**FDA-Cleared Vibratory  
Orthodontic Device for Use  
With Braces And Aligners

# COMPREHENSIVE PEER-REVIEWED CLINICAL EVIDENCE

**AcceleDent®**  
Beyond Acceleration:  
Driving Predictable Outcomes

## SCIENCE

AUTHOR(S)	TITLE	JOURNAL/ CONFERENCE	DATE	PURPOSE	MODEL
Garcia-Lopez S et al.	The effects of gentle micropulse vibration on two types of murine osteoblasts	AAO Poster Presentation	09/2015	To further understand the role of the osteoblastic cell signaling molecules stimulated with micropulse vibration from the AcceleDent® Aura device	In vitro study
<b>KEY OUTCOME</b>	<b>Osteoblasts can sense gentle micropulse vibrations (AcceleDent SoftPulse Technology®), which may influence bone remodeling regulation.</b>				
Leethanakul et. al.	Vibratory stimulation increases interleukin-1 beta secretion during orthodontic tooth movement	Angle	01/2016	To investigate the effects of application of vibratory stimulation interleukin (IL)-1b secretion during maxillary canine distalization	Human (n=15) <b>RCT*</b>
<b>KEY OUTCOME</b>	<b>Application of vibratory stimuli enhanced the secretion of IL-1b in GCF and accelerated orthodontic tooth movement.</b>				
Liu D et al.	Transmission of Mechanical Vibration from AcceleDent® to Dentition and Skull	IADR Poster Presentation	03/2013	To measure the transmission of vibration to oral structures using AcceleDent®	Engineering bench test
<b>KEY OUTCOME</b>	<b>AcceleDent micropulses may be transmitted throughout the entire dentition even when there is not complete contact of the mouthpiece.</b>				

## ACCELERATED TOOTH MOVEMENT

AUTHOR(S)	TITLE	JOURNAL/ CONFERENCE	DATE	PURPOSE	MODEL
Bowman, S.J.	The Effect of Vibration on Molar Distalization	JCO	11/2016	To determine whether AcceleDent® can enhance the effect of upper-molar distalization.	Human (n=60)
<b>KEY OUTCOME</b>	<b>Initial data on how AcceleDent may expedite upper-molar distalization tooth movement in Class II non-extraction patients.</b>				
Bowman S.J.	The Effect of Vibration on the Rate of Leveling and Alignment	JCO	04/2015	To evaluate the effects of vibration with AcceleDent® on the speed of orthodontic leveling and alignment	Human (n=117)
<b>KEY OUTCOME</b>	<b>Amount of time required to achieve both dental alignment and leveling in Class I non-extraction treatment was reduced by using an AcceleDent® device to apply vibration. Investigator found a clinically beneficial and statistically significant 30% increase in the rate of tooth movement during orthodontic leveling of the mandibular dentition.</b>				
Kau et al.	A Radiographic Analysis of Tooth Morphology Following the Use of a Novel Cyclical Force Device in Orthodontics	Head & Face Medicine	2011	To determine the effects of a cyclical device on root lengths of teeth	Human (n=14)
<b>KEY OUTCOME</b>	<b>Treatment with AcceleDent had no effect on root lengths.</b>				
Pavlin et. al.	Cyclic loading (vibration) accelerates tooth movement in orthodontic patients: A double-blind, randomized controlled trial	Seminars in Orthodontics	2015	To assess the effect of a defined low-level cyclic loading on the rate of orthodontic tooth movement	Human (n=45) <b>RCT*</b>
<b>KEY OUTCOME</b>	<b>Low-level cyclic loading of 0.25N at 30 Hz increases the rate of tooth movement when applied as an adjunct to orthodontic treatment.</b>				
Shapiro et. al.	Orthodontic movement using pulsating force-induced piezoelectricity	AJO-DO	1979	To evaluate tooth movement as pulsating forces are applied to maxillary molars	Human (n=1)
<b>KEY OUTCOME</b>	<b>Initial published case report of pulsating-force-induced movement of teeth.</b>				

## PATIENT COMFORT

AUTHOR(S)	TITLE	JOURNAL/ CONFERENCE	DATE	PURPOSE	MODEL
Lobre et al.	Pain control in orthodontics using a micropulse vibration device: A randomized clinical trial	Angle	2015	To investigate the relationship between a micropulse vibration device (AcceleDent®) and pain perception during orthodontic treatment	Human (n=58) <b>RCT*</b>
<b>KEY OUTCOME</b>	<b>AcceleDent significantly lowered overall pain and biting pain associated with orthodontic treatment.</b>				

## TREATMENT EFFICIENCY

AUTHOR(S)	TITLE	JOURNAL/ CONFERENCE	DATE	PURPOSE	MODEL
Kennedy D, Liu D.	Effect of Mechanical Vibration on Resistance to Sliding in the Fixed Orthodontic Appliance	AAO Poster Presentation	04/2014	To test the effect of vibration on the sliding resistance (i.e., friction and binding) of a fixed orthodontic appliance system	Engineering bench test
<b>KEY OUTCOME</b>	<b>With AcceleDent, static and dynamic friction between orthodontic wire and brackets in a fixed appliance system were reduced by 8.5% and 22.3%, respectively.</b>				
Ojima et al.	Accelerated Extraction Treatment with Invisalign	JCO	2014	To describe a patient with severe anterior crowding who was treated with Invisalign appliances after the extraction of both upper canines and lower first premolars, using a microvibration device to accelerate tooth movement	Human (n=1)
<b>KEY OUTCOME</b>	<b>Initial report of accelerated treatment in a complex case with severe anterior crowding treated with Invisalign appliances after the extraction of both upper canines and lower first premolars.</b>				
Orton-Gibbs S et al.	Accelerated Orthodontics using Pulsatile Forces in Orthognathic Surgical Patients	JCO	10/2016	To show how total treatment time can be reduced with the integration of AcceleDent® in patients undergoing orthodontic treatment in combination with orthognathic surgery	Human (n=15)
<b>KEY OUTCOME</b>	<b>AcceleDent® can be incorporated to accelerate treatment in a combined orthodontic/orthognathic surgery approach.</b>				
Orton-Gibbs S et al.	Clinical Experience with the Use of Pulsatile Forces to Accelerate Treatment	JCO	10/2015	To report the first extensive single-center experience with AcceleDent®	Human (n=117)
<b>KEY OUTCOME</b>	<b>After adjusting for prediction error, patients undergoing fixed appliance treatment with AcceleDent finished 33.5% faster than predicted, saving an average of 6.23 months of treatment time.</b>				
Seo Y et al.	Effect of self-ligating bracket type and vibration on frictional force and stick-slip phenomenon in diverse tooth displacement conditions: an in vitro mechanical analysis	EJO	11/2015	To evaluate the effects of self-ligating bracket (SLB) type and vibration on frictional force and stick-slip phenomenon (SSP) in diverse tooth displacement conditions when a levelling / alignment wire was drawn	Engineering bench test
<b>KEY OUTCOME</b>	<b>AcceleDent reduced the frictional force and the binding of resistance-to-sliding between the bracket and wire interface in passive and active self-ligating bracket systems.</b>				
Uribe et al.	Increasing orthodontic and orthognathic surgery treatment efficiency with a modified surgery-first approach	AJO-DO	2015	To determine how the total treatment time can be reduced with a modified surgery-first approach	Human (n=1)
<b>KEY OUTCOME</b>	<b>Illustrates how AcceleDent can be incorporated to expedite tooth movement to accelerate treatment in a combined orthodontic/orthognathic surgery protocol, which can last at least 2 years. This case was treated in 12 months.</b>				

\*Randomized Control Trial

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