The evolution of the Waterpik® Water Flosser spans 5 decades beginning in the 1960s where research findings demonstrated safety and efficacy in improving oral health, to the 21st century demonstrating its superiority to other self-care aids.

This has been possible by the commitment of Waterpik® to adhere to the, “ethical and scientific quality standard for designing, conducting, recording and reporting trials that involve the participation of human subjects”\(^1\). These guidelines have their origin in the Declaration of Helsinki. This assures the public that the trial participants’ rights, safety and well-being is protected and that the clinical trial data are credible.\(^2\)

Clinical trials with the Waterpik® Water Flosser are conducted at independent universities and clinical research organizations (CRO) that follow these guidelines. We also strive to provide clinically meaningful results that address oral hygiene needs and products that are quick and easy to use.

Collectively, the 75+ research studies published in peer-reviewed journals have unequivocally demonstrated the Waterpik® Water Flosser is safe and effective for multiple patient needs.\(^3\) This information provides a solid base for making informed decision regarding patient self-care recommendations that work and help increase compliance.

In 2017 the Waterpik® Water Flosser was the first in the powered interdental class to received the American Dental Association (ADA) Seal of Acceptance. The research demonstrated its ability to remove plaque interdentally and along the gingival margin and reduce or prevent gingivitis.

It is well established that brushing is not enough. The addition of a Waterpik® Water Flosser to either a powered or manual toothbrush is an evidence-based and practical choice.

Sincerely,

Deborah

Deborah M. Lyle, RDH, BS, MS
Director of Clinical & Professional Affairs

---


3. Bibliography of Waterpik research, page 26 - 27
**Table of Contents**

**Waterpik® Sonic-Fusion**
- Waterpik® Sonic-Fusion*: Twice as Effective as Regular Brushing and Flossing for Removing Plaque and Improving Gingival Health
- Waterpik® Sonic-Fusion*: Significantly More Effective than Sonicare® DiamondClean for Removing Plaque and Improving Gingival Health

**Brushing Alone is Not Enough**
- The Waterpik® Water Flosser Significantly Improves Oral Health Benefits over a High-End Oscillating Electric Toothbrush
- The Waterpik® Water Flosser: Adding a Waterpik® Water Flosser to a Manual Toothbrush is up to 3.1 Times as Effective as Brushing Alone

**Plaque Removal**
- Waterpik® Water Flosser Removes 99.9% of Plaque Biofilm After 3-Second Treatment
- Waterpik® Water Flosser: Significantly More Effective than String Floss for Removing Plaque

**Waterpik® Water Flosser vs. String Floss**
- Waterpik® Water Flosser: Twice as Effective as String Floss for Reducing Gingival Bleeding
- Waterpik® Water Flosser: Over 50% More Effective than String Floss for Reducing Gingivitis

**Waterpik® Water Flosser vs. Sonicare® Air Floss**
- Waterpik® Water Flosser: 80% More Effective than Sonicare® Air Floss for Reducing Gingivitis
- Waterpik® Water Flosser: Significantly More Effective than Sonicare® Air Floss Pro for Improving Gingival Health
- The Waterpik® Water Flosser: Significantly More Effective than the Sonicare® Air Floss Pro for Improving Oral Health

**Waterpik® Water Flosser vs. Interdental Brushes**
- The Waterpik® Water Flosser: Significantly More Effective than Interdental Brushes for Removing Plaque
- The Waterpik® Water Flosser: Significantly More Effective than Interdental Brushes for Improving Gingival Health
- The Waterpik® Water Flosser: Significantly More Effective than Interdental Brush for Improving Gingival Health

**Safety**
- Waterpik® Water Flosser: Unequivocally Proven Safe in Clinical Studies Over 5 Decades
- Waterpik® Water Flosser: Safe and Effective up to 100 psi

**Stain Removal**
- Waterpik® Whitening Water Flosser: Improved Stain Removal Over Tooth Brushing Alone

**Waterpik® Water Flosser vs. Subgingival Antibiotics**
- Waterpik® Water Flosser: An Effective Alternative to Subgingival Antibiotic Treatment for Periodontal Maintenance Patients

**Implants**
- Delivering CHX with the Waterpik® Pik Pocket™ Tip is More Effective than Rinsing with CHX for Implant Maintenance
- Waterpik® Water Flosser: 2 Times as Effective as String Floss for Implant Patients

**Orthodontics**
- Waterpik® Water Flosser: 3 Times as Effective as String Floss for Orthodontic Patients

**Diabetes**
- Waterpik® Water Flosser: Significant Reduction in Plaque Biofilm, Gingivitis, and Bleeding for Patients with Diabetes

**Bibliography**
**Objective**
To determine the effectiveness of Waterpik® Sonic-Fusion® in reducing plaque and the clinical signs of inflammation as compared to standard brushing and flossing.

**Methodology**
This is a randomized, controlled, parallel clinical trial. Thirty five subjects were enrolled into each group. One group used Waterpik® Sonic-Fusion®, brushing for two minutes and flossing for one minute, and one group used an ADA standard toothbrush and dental floss. Gingival health was measured using bleeding on probing (BOP) and the Modified Gingival Index (MGI) at baseline, two weeks, and four weeks. The Rustogi Modified Navy Plaque Index (RMNPI) scores were measured at baseline, two weeks, and four weeks. All subjects were provided written and verbal instructions.

**Results**
Both Sonic–Fusion® and standard brushing and flossing showed a significant reduction in plaque, BOP, and MGI from baseline to four week (p<0.001). The Waterpik® Sonic-Fusion® group was more than twice as effective than the standard brushing and flossing group for whole mouth measurements.

**Conclusion**
This study demonstrates that the Waterpik® Sonic-Fusion® is more than twice as effective as traditional brushing and flossing for improving oral health.
Waterpik® Sonic-Fusion®: Significantly More Effective than Sonicare® DiamondClean for Removing Plaque and Improving Gingival Health

Comparison of a Novel Sonic Toothbrush With a Traditional Sonic Toothbrush and Manual Brushing and Flossing on Plaque, Gingival Bleeding, and Inflammation: A Randomized Controlled Clinical Trial


Objective
To determine the effectiveness of Waterpik® Sonic-Fusion® in reducing plaque and the clinical signs of inflammation as compared to Sonicare® DiamondClean.

Methodology
This is a randomized, controlled, parallel clinical trial. Thirty five subjects who met the criteria were enrolled into each group. One group used Waterpik® Sonic-Fusion®, brushing for two minutes and flossing for one minute, and one group used Sonicare® DiamondClean electric toothbrush with DiamondClean Brush Head. Gum Health was measured using bleeding on probing (BOP) and the Modified Gingival Index (MGI) at baseline, two weeks, and four weeks. Plaque was evaluated by the Rustogi Modified Navy Plaque Index (RMNPI). Scores were measured at baseline, two weeks, and four weeks. All subjects were provided written and verbal instructions.

Results
Both Sonic-Fusion® and Sonicare® DiamondClean showed a significant reduction in BOP and MGI from baseline to four weeks (p<0.001). The Waterpik® Sonic-Fusion® group was significantly more effective than Sonicare® DiamondClean for all clinical parameters, improving BPO by 38%, MGI by 38%, and RMNPI by 36%.

Conclusion
This study demonstrates that the Waterpik® Sonic-Fusion® is significantly more effective than Sonicare® DiamondClean for improving oral health.
The Waterpik® Water Flosser Significantly Improves Oral Health Benefits over a High-End Oscillating Electric Toothbrush

Efficacy of the Use of a Water Flosser in Addition to an Electric Toothbrush on Clinical Signs of Inflammation: 4-Week Randomized Controlled Trial


Objective
To determine incremental efficacy of adding a Waterpik® Water Flosser to a high-end Oral-B® electric toothbrush, on the reduction of plaque and gingivitis, in comparison to brushing alone with the electric toothbrush.

Methodology
Seventy subjects completed this four week, randomized controlled trial. Subjects were assigned to one of two groups; Waterpik® Water Flosser plus Oral-B® Pro 2000 with Precision Clean brush head (WF); or Oral-B Pro 2000 with Precision Clean brush alone (OR). Gingivitis was evaluated by Bleeding on Probing (BOP) and Modified Gingival Index (MGI). Plaque was evaluated by Rustogi Modification of Navy Plaque Index (RMNPI). Data was collected at baseline, two weeks, and four weeks. Subjects were provided with manufacturer instructions on how to use.

Results
Both groups showed a significant reduction from baseline in BOP, MGI, and RMNPI at two weeks, and four weeks p<0.001. The WF group had significantly better results compared to the OR group for all clinical parameters, improving the reduction of BOP by 37%, MGI by 36%, and RMNPI by 33%, after four weeks.

Conclusion
This study demonstrates that the addition of a Waterpik® Water Flosser to the use of a high quality oscillating electric toothbrush is significantly more effective versus using the electric toothbrush alone.
The Waterpik® Water Flosser: Adding a Waterpik® Water Flosser to a Manual Toothbrush is up to 3.1 Times as Effective as Brushing Alone

Effectiveness of Water Flosser Compared to Manual Toothbrush on Clinical Signs of Inflammation: A Randomized Controlled Trial


Objective
To determine the effectiveness of a Waterpik® Water Flosser in reducing clinical signs of inflammation as compared to brushing alone.

Methodology
Seventy two subjects were randomized equally into two groups in this four week, parallel clinical trial: ADA standard manual toothbrush and Waterpik® Water Flosser (WF) or ADA standard manual toothbrush alone (MT). Inflammation was measured using bleeding on probing (BOP) and the Modified Gingival Index (MGI) at baseline, two weeks, and four weeks. The Rustogi Modified Navy Plaque Index (RMNPI) scores were measured at baseline, two weeks, and four weeks. Both groups brushed as they normally do and used the toothpaste provided.

Results
Both groups showed a significant reduction in BOP, MGI, and RMNPI at four weeks (p<0.001, except marginal RMNPI for MT p=0.006). The WF group was significantly more effective for all clinical measures, improving BOP 3.1X, MGI 2.7X, and Plaque 2.4X.

Conclusion
This study demonstrates that a Waterpik® Water Flosser and manual toothbrush are superior to brushing alone in the reduction of inflammation and dental plaque.
**Waterpik® Water Flosser Removes 99.9% of Plaque Biofilm After 3-Second Treatment**

Biofilm Removal with a Dental Water Jet


**Objective**
To evaluate the effect of the Waterpik® Water Flosser on plaque biofilm removal using scanning electron microscopy (SEM).

**Methodology**
Eight periodontally involved teeth were extracted. Ten slices were cut from four teeth and were inoculated with saliva and left for four days to further grow plaque biofilm. Four slices were treated with the Classic Jet Tip, four slices were treated with the Orthodontic Tip, and two slices were used as controls. The remaining four teeth were treated with the Orthodontic Tip to evaluate the removal of calcified plaque biofilm. All teeth were treated using medium pressure for three seconds and evaluated by SEM.

**Results**
The Classic Jet Tip removed 99.9% and the Orthodontic Tip removed 99.8% of the plaque biofilm from the treated areas after a three-second exposure as viewed by SEM. The Orthodontic Tip significantly removed the calcified biofilm from the surface of the four teeth as viewed by the naked eye and SEM.

**Conclusion**
The Waterpik® Water Flosser significantly removes plaque biofilm.
**Waterpik® Water Flosser: Significantly More Effective than String Floss for Removing Plaque**

Evaluation of the Plaque Removal Efficacy of a Water Flosser Compared to String Floss in Adults After a Single Use


**Objective**

To compare the plaque removal efficacy of the Waterpik® Water Flosser to string floss combined with a manual toothbrush.

**Methodology**

Seventy subjects participated in this randomized, single use, single blind, parallel clinical study. Subjects abstained from any oral hygiene for twenty three to twenty five hours prior to their appointment. Subjects were screened and assigned to one of two groups: Waterpik® Water Flosser plus a manual toothbrush, or waxed string floss plus a manual toothbrush. Instructions were provided for each product used. Each participant brushed for two-minutes using the Bass method. Group One used the Water Flosser with 500 ml of warm water and Group Two used waxed string floss cleaning all areas between the teeth. Subjects were observed to make sure they covered all areas and followed instructions. Scores were recorded for whole mouth, marginal, approximal, facial, and lingual regions for each subject using the Rustogi Modification Navy Plaque Index.

**Results**

The Waterpik® Water Flosser was 29% more effective than string floss for overall plaque removal, 29% for approximal surfaces, and 33% for marginal surfaces.

**Conclusion**

The Waterpik® Water Flosser is significantly more effective than string floss in removing plaque for all tooth surfaces.
Waterpik® Water Flosser: Twice as Effective as String Floss for Reducing Gingival Bleeding

The Effect of Different Interdental Cleaning Devices on Gingival Bleeding


Objective
To evaluate the efficacy of a manual toothbrush plus a Water Flosser versus a manual toothbrush plus traditional floss, to reduce gingival bleeding and plaque biofilm.

Methodology
One hundred four subjects participated in this thirty-day, randomized, single blind study. Group A used a Waterpik® Water Flosser with the Classic Jet Tip plus a manual toothbrush, Group B used a Waterpik® Water Flosser with the Plaque Seeker™ Tip plus a manual toothbrush, and Group C used waxed string floss plus a manual toothbrush. Subjects brushed twice daily and used either the Water Flosser or floss once daily in the evening. Gingival bleeding and plaque biofilm were evaluated at fourteen days and thirty days.

Results
After fourteen days, used in conjunction with manual toothbrushing, the Waterpik® Water Flosser with the Classic Jet Tip was twice as effective as traditional floss at reducing gingival bleeding. At thirty days, the relative improvement in gingival bleeding for the Waterpik® Water Flosser groups was even more dramatic. There were no significant differences between the Waterpik® Water Flosser Classic Jet Tip and the Plaque Seeker™ Tip.

Conclusion
The Waterpik® Water Flosser is a more effective alternative to traditional dental floss for reducing gingival bleeding and improving oral health.
Waterpik® Water Flosser: Over 50% More Effective than String Floss for Reducing Gingivitis

Comparison of Irrigation to Floss as an Adjunct to Toothbrushing: Effect on Bleeding, Gingivitis and Supragingival Plaque

Barnes CM, Russell CM, Reinhardt RA et al. J Clin Dent, 2005; 16(3): 71-77. Study conducted at the University of Nebraska Medical Center, College of Dentistry, Lincoln, Nebraska.

Objective
To evaluate the ability of a Waterpik® Water Flosser paired with either a power or manual toothbrush, and a manual toothbrush and floss, to reduce gingivitis, bleeding, and supragingival plaque biofilm.

Methodology
One hundred five subjects participated in this four-week study. One group used a Waterpik® Water Flosser with a manual toothbrush and a second group used the Waterpik® Water Flosser with a power toothbrush. The control group used a manual toothbrush and floss. Subjects brushed twice daily and used either the Water Flosser or dental floss once daily. Plaque biofilm, bleeding, and gingivitis were evaluated at two and four weeks.

Results
At four weeks, the addition of a Waterpik® Water Flosser resulted in significantly better oral health, regardless of toothbrush type used, over manual brushing and flossing. Adding the Waterpik® Water Flosser was up to 93% better in reducing bleeding and up to 52% better at reducing gingivitis than traditional dental floss.

Conclusion
The Waterpik® Water Flosser is an effective alternative to traditional dental floss for reducing gingivitis.
**Objective**
To compare the Waterpik® Water Flosser to the Sonicare® Air Floss (Model HX8181) for the reduction of gingivitis and plaque biofilm over a four week period.

**Methodology**
Eighty-two subjects participated in this four week, randomized, single blind, clinical study. Subjects were assigned to one of two groups: Waterpik® Water Flosser plus a manual toothbrush; or Sonicare® Air Floss plus a manual toothbrush. Subjects were instructed on the proper use of the interdental cleaning devices based on manufacturer’s directions. Instructions on the Bass method of toothbrushing were also provided. Gingivitis scores were recorded for whole mouth, facial, and lingual using the Modified Gingival Index. Plaque scores were recorded for whole mouth, facial, lingual, marginal, and approximal regions using the Rustogi Modification of the Navy Plaque Index.

**Results**
The Waterpik® Water Flosser was significantly more effective than Sonicare® Air Floss at reducing plaque and gingivitis for all areas measured after four weeks of use. Waterpik® Water Flosser was 80% more effective in overall gingivitis reduction and 70% more effective for plaque reduction than Sonicare® Air Floss. Notably, the Waterpik® Water Flosser was twice as effective for plaque removal from lingual surfaces and more than three times as effective at the gingival margin vs Sonicare® Air Floss.

**Conclusion**
The Waterpik® Water Flosser is significantly more effective than Sonicare® Air Floss (Model HX8181) for reducing gingivitis and plaque.
**Waterpik® Water Flosser: Significantly More Effective than Sonicare® Air Floss Pro for Improving Gingival Health**

Efficacy of two interdental cleaning devices on clinical signs of inflammation: a four-week randomized controlled trial.


**Objective**

To compare the Waterpik® Water Flosser to the Sonicare® Air Floss Pro (model HX8341) for the reduction of bleeding, gingivitis, and plaque over a four week period.

**Methodology**

Sixty-nine subjects completed this four week, randomized, single blind, two group parallel clinical study. Subjects were assigned to one of two groups: Waterpik® Water Flosser plus a manual toothbrush; or Sonicare® Air Floss Pro plus a manual toothbrush. Subjects were instructed on the proper use of each based on manufacturer’s directions. Subjects brushed for two minutes each day and used their assigned interdental cleaning device once in the evening. Gingival health was evaluated by measuring for bleeding on probing (BOP) and using the Modified Gingival Index (MGI). Plaque scores were recorded using the Rustogi Modification of the Navy Plaque Index (RMNPI).

**Results**

The Waterpik® Water Flosser was significantly more effective than the Sonicare® Air Floss Pro at reducing gingival bleeding for all areas measured. Notably, the Waterpik® Water Flosser was significantly more effective, improving BOP by 54%, MGI by 32%, and 28% RMNPI after four weeks compared to the Sonicare® Air Floss Pro.

**Conclusion**

The Waterpik® Water Flosser is significantly more effective than Sonicare® Air Floss Pro for improving gingival health.
The Waterpik® Water Flosser: Significantly More Effective than the Sonicare® Air Floss Pro for Improving Oral Health

Effectiveness of two Interdental Cleaning Devices on Clinical Signs of Inflammation: A Randomized Clinical Trial


Objective
To determine the effectiveness of a Waterpik® Water Flosser in reducing clinical signs of inflammation as compared to an Air Floss.

Methodology
Seventy subjects were randomized equally into two groups in this four week, parallel clinical trial: manual tooth brushing and water flosser (WF, model WP-120, two prong plug) or manual tooth brushing and Air Floss (AF, Model HX8340). Inflammation was measured using bleeding on probing (BOP) and the Modified Gingival Index (MGI) at baseline, two weeks, and four weeks. The Rustogi Modified Navy Plaque Index (RMNPI) scores were measured at baseline, two weeks, and four weeks. Both groups followed manufacturer instructions for use of interdental devices for one minute. The Waterpik® Water Flosser group used power setting eight and the Air Floss group used the three burst setting.

Results
Both groups showed a significant reduction in BOP, MGI, and RMNPI at two weeks, and four weeks. (p<0.001). The Waterpik® Water Flosser was at least 50% more effective than the Air Floss at reducing BOP for all areas measured at four weeks (p<0.001). The Waterpik® Water Flosser was also more effective than the Air Floss for reducing MGI: 60% for whole mouth, 68% for proximal area, 86 for facial proximal area, 54% for lingual proximal area, 48% for marginal area, 62% for facial marginal, and 36% for lingual marginal area (p<0.001). The Waterpik® Water Flosser was more effective for reducing plaque compared to the Air Floss for whole mouth (31%, P=0.008), proximal area (51%, p=0.017), and lingual surface (46%, p=0.004).

Conclusion
This study demonstrates that a Waterpik® Water Flosser and manual toothbrush are superior to the Air Floss and manual toothbrush in the reduction of inflammation and dental plaque.
The Waterpik® Water Flosser: Significantly More Effective than Interdental Brushes for Removing Plaque


Objective
To determine the efficacy of a Waterpik® Water Flosser vs. interdental brushes for plaque removal.

Methodology
Twenty-eight subjects completed this one-time use study. Subjects were randomly assigned to one of two groups: Waterpik® Water Flosser (WF) plus manual tooth brushing or interdental brushes (IDB) plus manual tooth brushing. Plaque scores were obtained using the Rustogi Modification of the Navy Plaque Index (RMNPI). Subjects were instructed on the use of their interdental product. Post-cleaning scores were obtained after a supervised brushing and use of the interdental device. Scores were recorded for whole mouth, marginal, approximal, facial, and lingual regions for each subject.

Results
The Waterpik® Water Flosser group was significantly more effective than the IDB group for removing plaque from all areas measured. Specifically, the Waterpik® Water Flosser was 18% more effective for whole mouth and marginal areas, 20% for approximal areas, 11% for facial areas, and 29% for lingual areas.

Conclusion
The Waterpik® Water Flosser and manual toothbrush removes significantly more plaque from tooth surfaces than interdental brushes and a manual toothbrush after a single use.
Waterpik® Water Flosser vs. Interdental Brushes

The Waterpik® Water Flosser: Significantly More Effective than Interdental Brushes for Improving Gingival Health

Comparison of Water Flosser and Interdental Brush on Reduction of Gingival Bleeding and Plaque: A Randomized Controlled Pilot Study.


Objective
To determine the efficacy of a Waterpik® Water Flosser vs. interdental brushes for plaque and gingivitis reduction.

Methodology
Twenty-eight subjects completed this two week study. Subjects were assigned to one of two groups: the Waterpik® Water Flosser (WF) plus a manual toothbrush or interdental brushes (IDBs) plus a manual toothbrush. Gingival health was evaluated by measuring bleeding on probing (BOP) at six sites per tooth. Plaque removal was measured using the Rustogi Modification of the Navy Plaque Index (RMNPI).

Results
The Waterpik® Water Flosser was significantly more effective than the interdental brushes for reducing gingival bleeding. Notably, the Waterpik® Water Flosser was 56% more effective for reducing whole mouth bleeding, and 53% more effective for reducing whole mouth approximal bleeding.

Conclusion
The Waterpik® Water Flosser is significantly more effective than interdental brushes for improving gingival health.
The Waterpik® Water Flosser: Significantly More Effective than Interdental Brush for Improving Gingival Health

Water flosser compared to interdental brush on bleeding scores and gingival abrasion


Objective
To compare the effectiveness of a Waterpik® Water Flosser (WF) and interdental brush (IDB) on bleeding indices and gingival abrasion.

Methodology
Seventy-eight subjects completed this four week, randomized controlled trial. Subjects were assigned to one of two groups; Waterpik® Water Flosser (WF) plus a manual toothbrush or an interdental brush (IDB) plus a manual toothbrush. Gingival inflammation was evaluated by measuring Bleeding on Pocket Probing (BOPP) and Bleeding on Marginal Probing (BOMP). Data was collected on contra-lateral quadrants. The Gingival Abrasion Score (GAS) was used to compare the incidence of abrasion between the groups.

Results
Both groups demonstrated a significant reduction in BOPP and BOMP from baseline to four weeks for all sites and interdental sites separately. The WF group was significantly more effective than the IDB group for reducing BOPP for all sites at week four (p=0.030) and BOMP for all sites and interdental sites at week four (p=0.003, p=0.019 respectively). There were no differences in gingival abrasion scores between the groups.

Conclusion
The Waterpik® Water Flosser is significantly more effective than the interdental brush for improving gingival health in this clinical study.
Waterpik® Water Flosser: Unequivocally Proven Safe in Clinical Studies Over 5 Decades

Safety of a Water Flosser: A Literature Review

Objective
Since the introduction of the first Waterpik® Water Flosser in 1962, over sixty clinical trials have been published. Collectively, the studies demonstrate significant plaque removal, reduction of gingival bleeding, and reversal of inflammation (gingivitis). The majority of the studies are randomized controlled trials and published in peer-reviewed journals providing the reader with the best evidence to make informed clinical decisions. This literature review was designed specifically to address the safety of a Water Flosser.

Methodology
This review was divided into four sections: histological findings, subgingival pathogens, probing pocket depth and clinical attachment levels, and bacteremia.

Results
• **Histological findings:** Studies showed a significant reduction in inflammation on the cellular level compared to non-treated sites which showed varying levels of inflammation. This confirms that a Waterpik® Water Flosser is safe for the periodontal pocket tissue.

• **Subgingival pathogens:** Studies show significant removal of subgingival pathogens, even in deep pockets, with the use of a Waterpik® Water Flosser. This was not generally seen in non-Water Flossed sites. This addresses the concern that bacteria might be driven deeper into pockets.

• **Pocket depths and clinical attachment levels:** Studies show a significant improvement in probing pocket depth and clinical attachment levels or no change. These studies address the concern that a Waterpik® Water Flosser might break the epithelial attachment.

• **Bacteremia:** Research shows the incidence of bacteremia is the same for tooth brushing, flossing, wood sticks, water flossing, and mastication.

Conclusion
The Waterpik® Water Flosser has been proven safe.

Findings from Clinical Studies on the Safety of the Waterpik® Water Flosser
• Histological reduction in inflammation
• Reduction or stability of probing pocket depth
• Improvement or stability of clinical attachment levels
• Removal of subgingival pathogenic bacteria
• Improvements in morphological subgingival flora
• No adverse effects reported
• Clinical changes demonstrating a reduction in gingivitis, inflammation, and plaque
Waterpik® Water Flosser: Safe and Effective up to 100 psi

Evaluation of Water Flosser Safety at High Pressure Settings


Objective
To evaluate Waterpik® Water Flosser safety on gingival and epithelial tissue at high pressure settings.

Methodology
One hundred and five subjects were randomly assigned to one of three treatment groups in this six week, parallel clinical trial: Waterpik® Water Flosser plus manual toothbrush (WF), string floss plus manual toothbrush (SF), manual toothbrush only (MT). Data was collected on six designated teeth at baseline, two weeks, four weeks, and six weeks for clinical attachment level (CAL), probing pocket depth (PPD) and oral soft tissue (OST). For CAL and PPD data was recorded at six sites per tooth. Subjects were instructed to brush twice a day with the toothbrush and tooth paste provided. Written and verbal instructions were given for the WF and SF groups. The WF group changed pressure settings as instructed: #4 – 8 for two weeks, #9 for two weeks, and #10 for two weeks.

Results
No adverse effects were reported. The Waterpik® Water Flosser exhibited stability in clinical attachment level and probing pocket depths. The results compared favorably to string floss or manual brushing alone, demonstrating it is comparable, and in some sites, better than the SF and MT groups. No negative impact to Oral Soft Tissue occurred.

Conclusion
This study removes any concerns that the Waterpik® Water Flosser, regardless of pressure, is associated with a negative impact on the gingival tissue or epithelial attachment as measured by CAL and PPD. In fact, CAL and PPD improvements were observed for the Water Flossing group.
Waterpik® Whitening Water Flosser: Improved Stain Removal Over Tooth Brushing Alone

Evaluation of Tooth Whitening using a Liquid Dentifrice Delivered by the Waterpik® Whitening Water Flosser.

Milliman JL, Milleman KR, Battershell K, Lyle DM. Study conducted at Salus Research, Fort Wayne, IN. 2014

Objective
To evaluate the effectiveness of an experimental ‘liquid dentifrice’ delivered using a Waterpik® Water Flosser in removing stain from approximal and marginal areas of the tooth by patients over a two week period compared to brushing alone.

Methodology
Extrinsic tooth stains on the facial approximal and marginal surfaces of the four mandibular incisors were scored using the MacPherson modification of the Lobene Stain Index. This index assesses both the intensity and area of stain present on the mesial and distal regions of each tooth, which are prime locations for stain formation. For each case study subject, a color photograph of the mandibular anterior teeth was taken before and after the supervised and assisted flossing. The photographs were used for supporting documentation and not for data analysis.

Results
After two weeks, the Waterpik® Water Flosser treatment group using the liquid dentifrice experienced a reduction in extrinsic stain of 25% as measured by the Modified Lobene Stain Index. The toothbrushing group saw no improvement, as measured by the same index.

Conclusion
Daily use of the Waterpik® Water Flosser with a liquid dentifrice removes more extrinsic stain than tooth brushing alone.
**Waterpik® Water Flosser: An Effective Alternative to Subgingival Antibiotic Treatment for Periodontal Maintenance Patients**

Periodontal Maintenance Following Scaling and Root Planing, Comparing Minocycline Treatment to Daily Oral Irrigation with Water

Genovesi AM, Lorenzi C, Lyle DM et al. Minerva Stomatol 2013; 62(Suppl. 1 to NO. 12):1-9. Study conducted at the Tuscan Stomatologic Institute, Department of Dentistry, Versilia General Hospital, Lido di Camaiore (LU), Italy.

**Objective**
Assess the efficacy of daily Water Flossing in comparison to subgingival minocycline treatment for subjects with moderate to severe periodontitis.

**Methodology**
In this single-center, parallel, single blind, randomized clinical study, thirty subjects with moderate to severe periodontitis were placed into a minocycline-treated group or a Water Flossing group. Scaling and root planing was carried out, and both groups received instruction on proper home-based oral hygiene. One group was administered minocycline inside their deepest periodontal pockets at the initial hygiene visit. The second group was instructed to use a Waterpik® Water Flosser once a day. Clinical and microbiological parameters were measured at baseline and repeated after thirty days.

**Results**
Both the Waterpik® Water Flosser and minocycline treatment groups experienced a significant reduction in all clinical parameters tested at thirty days. The Water Flosser group reduced bleeding 81% v. 76% for the minocycline group. Moreover, both procedures effectively reduced the typical parameters of periodontitis (bleeding on probing, pocket depth, and clinical attachment levels). Differences between the two therapies were not statistically significant for clinical parameters or bacterial suppression.

**Conclusion**
The Waterpik® Water Flosser is an effective alternative to subgingival antibiotics for periodontal maintenance patients over a thirty day period.
Delivering CHX with the Waterpik® Pik Pocket™ Tip is More Effective than Rinsing with CHX for Implant Maintenance

Effects of Subgingival Chlorhexidine Irrigation on Peri-Implant Maintenance


Objective
To evaluate the effect of the Waterpik® dental water with the Pik Pocket™ tip using half strength (0.06%) chlorhexidine (CHX) compared to rinsing with full strength (0.12%) CHX.

Methodology
This randomized, three months study involved twenty-four patients with a minimum of two implants. Once daily, half the subjects used the Waterpik® dental water jet with the Pik Pocket™ tip with 0.06% CHX and the other half rinsed with 0.12% CHX. Plaque, gingivitis, bleeding, stain, and calculus were evaluated.

Results
Patients who used the Waterpik® dental water jet and the Pik Pocket™ tip had significantly greater reductions in plaque, gingivitis, and stain than those who only rinsed with CHX. For bleeding, the Waterpik® dental water jet was 87% more effective at reducing gingival bleeding.

Conclusion
Patients who used the Waterpik® dental water jet and the Pik Pocket™ tip had significantly greater reductions in plaque, gingivitis, and stain than those who only rinsed with CHX.
**Objective**

To compare the efficacy of a Waterpik® Water Flosser to string floss for implant patients.

**Methods**

Subjects were randomized into two groups; Group One used a manual toothbrush and a Waterpik® Water Flosser with the Plaque Seeker™ Tip (WF) and Group Two used a manual toothbrush and string floss (SF). There were twenty two implants in each group, and the primary outcome was the reduction in the incidence of bleeding on probing. Subjects brushed twice a day and used either the WF or SF once a day.

**Results**

There were no differences between the groups at baseline. At thirty days, eighteen of the twenty two (81.8%) implants in the WF group showed a significant reduction in BOP compared to six of the eighteen (33.3%) from the floss group. The WF group experienced 145% better reduction in gingival bleeding around implants vs. the string floss group (p=0.0018).

**Conclusion**

The Waterpik® Water Flosser is significantly more effective than string floss for improving gingival health around implants and is safe to use.
Waterpik® Water Flosser: 3 Times as Effective as String Floss for Orthodontic Patients

The Effect of a Dental Water Jet with Orthodontic Tip on Plaque and Bleeding in Adolescent Orthodontic Patients with Fixed Orthodontic Appliances


**Objective**
To compare the use of a manual toothbrush and the Waterpik® Water Flosser with the Orthodontic Tip to manual toothbrushing and flossing with a floss threader on bleeding and plaque biofilm reductions in adolescents with fixed orthodontic appliances. A control group consisted of brushing only.

**Methodology**
One hundred five adolescents with fixed orthodontics participated in this single-center, randomized study. Bleeding and plaque biofilm scores were collected at baseline, day fourteen, and day twenty eight.

**Results**
The Waterpik® Water Flosser was over three times as effective than flossing and over five times as effective than brushing alone for the reduction of plaque biofilm. For bleeding, the Waterpik® Water Flosser was 26% better than flossing and 53% better than brushing alone.

**Conclusion**
Adding a Waterpik® Water Flosser with the Orthodontic Tip to manual toothbrushing is significantly more effective at improving oral health in adolescent orthodontic patients than adding manual floss or brushing alone.
Waterpik® Water Flosser: Significant Reduction in Plaque Biofilm, Gingivitis, and Bleeding for Patients with Diabetes

Comparative Evaluation of Adjunctive Oral Irrigation in Diabetics


Objective
To compare the addition of the Waterpik® Water Flosser with the Pik Pocket™ subgingival irrigation tip to routine oral hygiene on the periodontal health of people with diabetes.

Methodology
Fifty two subjects with periodontal disease and either type 1 or type 2 diabetes participated in this three month randomized clinical trial. All subjects had scaling and root planing at baseline then were assigned to either add a Waterpik® Water Flosser with the Pik Pocket™ Tip twice daily to their oral hygiene routine or to continue practicing their regular oral hygiene routine. Periodontal health was measured via clinical and metabolic parameters.

Results
Adding the Waterpik® Water Flosser was superior to normal oral hygiene in reducing the traditional measures of periodontal disease: plaque biofilm, gingivitis, and bleeding on probing. The Waterpik® Water Flosser also reduced the serum levels of pro-inflammatory cytokines IL-1ß and PGE2, as well as the level of reactive oxygen species, a bacteria and host-mediated pathway for tissue destruction implicated in the pathogenesis of over one hundred conditions.

Conclusion
The Waterpik® Water Flosser provides significant periodontal health benefits, both clinically and biologically for people with diabetes.
Comprehensive Bibliography of Studies Using the Waterpik® Water Flosser (Also known as an oral irrigator, dental water jet or dental cleaning system)


Additional Reading
