



Center of Dental Medicine

Clinic for Preventive Dentistry, Periodontology and Cariology

PD. Dr. F.J. Wegehaupt

**In vitro study of the tooth-to-tooth contact of three powered
toothbrushes provided by Toothfriendly International, CH-4054
Basel**

BAIR X1 PLUS

BAIR X6

BAIR K5

For intramural use only

Confidential



Introduction

The present in-vitro-study of the tooth surface contact of the filaments of three powered toothbrushes was performed in the laboratories of the Clinic for Preventive Dentistry, Periodontology and Cariology of the University of Zurich Center of Dental Medicine under the supervision of PD Dr. F.J. Wegehaupt (Head Division of Preventive Dentistry and Oral Epidemiology). The study was commissioned by Albert Bär, Toothfriendly International, CH-4054 Basel in February 2017.

The assessment of the tooth surface contact of the toothbrush filaments on an automated brushing machine simulating horizontal brushing movements on model teeth is an established method of the laboratories of the Clinic for Preventive Dentistry, Periodontology and Cariology to assess the potential cleaning effect of marketed power toothbrushes. The method is also used when developing new toothbrush designs.

The objective of the study was to measure the contact between the toothbrush bristles and the tooth surface – referred to as “toothbrush-to-tooth contact, (TTC)” – during horizontal movements of four different powered toothbrushes and compare these results with results of different other marketed powered toothbrushes (data from the dissertation: In-vitro-Vergleich von in der Schweiz handelsüblichen elektrischen Zahnbürsten bezüglich Zahnflächenkontaktvermögen, Mathias Allemann, Zürich, 2007).



Material and methods

Powered toothbrushes tested:

BAIR X1 PLUS

BAIR X6

BAIR K5

A photographic documentation of the tested toothbrushes is attached.

Investigation of the contact between the toothbrushes and the tooth surface:

The toothbrushheads were guided over special tooth models with horizontal motions. The tooth surfaces brushed by the toothbrush bristles were measured using planimetric methods.

Test machine: Single-specimen brushing machine

Test parameters: Brushing load: 100 gram
Movement: Horizontal: 30 mm / 2 cycles per min
Brushing time: 30 s (= 1 cycle)

Test models: The model represent a maxillary sextant containing three molars, two premolars and one canine, with the buccal surfaces in one plane and slightly open interdental spaces.

Analysis of results: Before each trial the black model teeth were given a white coating. Tooth areas which were black again after the brushing test were considered to have been touched by the toothbrush bristles and thus potentially cleaned. The buccal were treated with bristles placed on tooth level and perpendicular to the tooth surface. The teeth at the end of the row (i.e. canines and



wisdom teeth) were excluded from the evaluation. A total of 16 teeth (4 teeth on 4 different models) were evaluated for each toothbrush. For the powered toothbrush BAIR K5, intended to be used by children, models simulating the situation in transitional dentition and a periodontitis affected dentition were used.

The cleaning potential of the tested toothbrushes was quantitatively assessed on the scanned-in tooth surfaces with the aid of a computer program using grey scale method.

This test is used to evaluate the cleaning potential of the tested toothbrushes on distinct tooth surfaces i.e. mesial, distal and buccal for horizontal brushing movements.



Results

The results of the quantitative assessment of the respective tooth surface contacts of the four tested brushheads expressed in percent of area of the single tooth surface and listed separately for mesial, buccal and distal surfaces as well as for the total tooth surfaces are given on the respective data sheets of the tested toothbrushes.

The toothbrush BAIR X6 showed very well rounded bristles, while the rounding of the bristles of BAIR X1 PLUS was less perfect. The rounding of the toothbrush bristles of toothbrush BAIR K5 was insufficient.

BAIR K5 showed good results for both approximal (mesial&distal surfaces together) and total cleaning (ranking 3rd in ranking of the marketed powered toothbrushes).

A handwritten signature in blue ink that reads 'F. Wegehaupt'.

PD Dr. F.J. Wegehaupt

Zurich, February 2017

Attached:

Photo documentation of tested toothbrushes

Raw data tables for the tested toothbrushes

Ranking of tested toothbrushes in comparison with other marketed toothbrushes



Photo documentation BAIR X1 PLUS

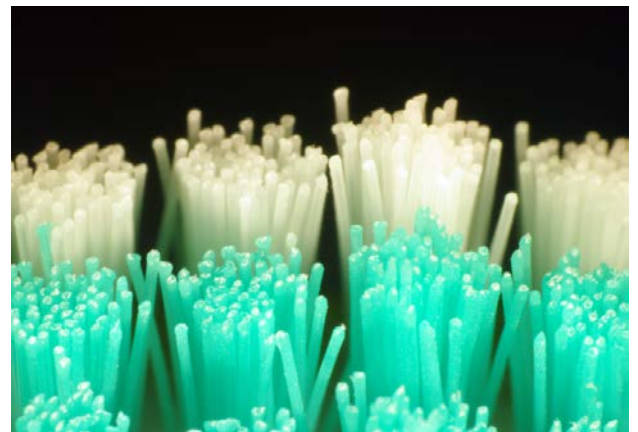
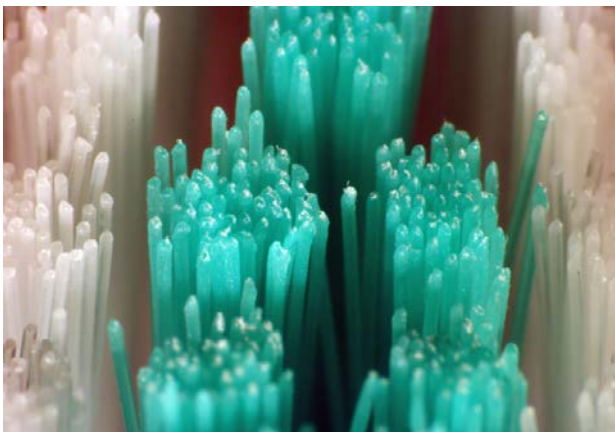




Photo documentation BAIR X6

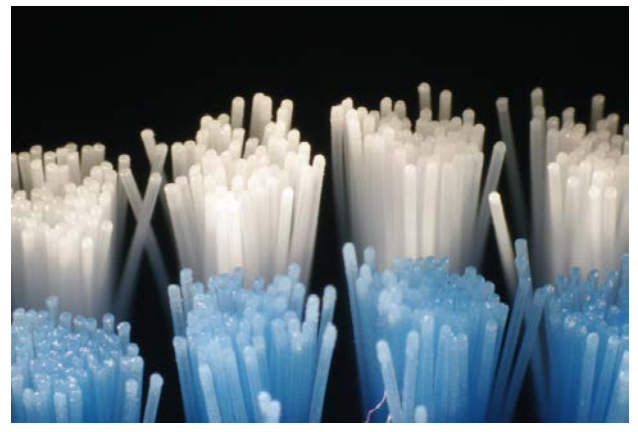
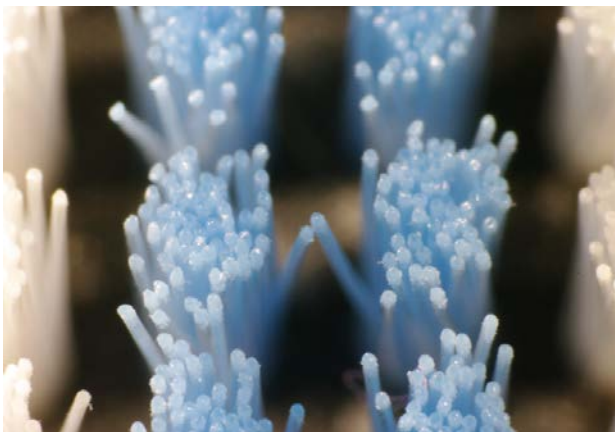
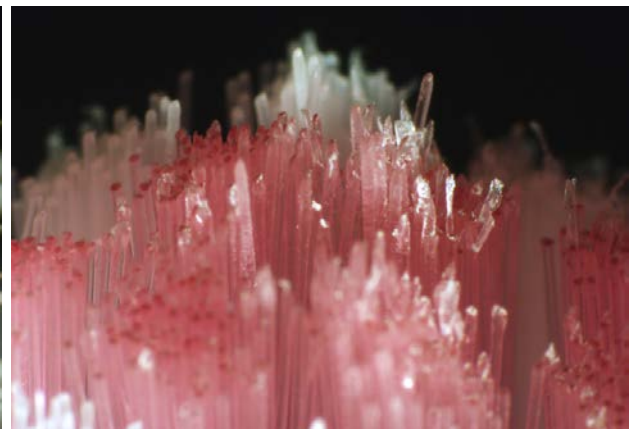





Photo documentation BAIR K5





Raw data table for BAIR X1 Plus:

 University of Zurich^{UZH}	Center of Dental Medicine Clinic of Preventive Dentistry, Periodontology and Cariology	Tooth surface contact	
		Brush #	1486
		Startdate	02/03/2017
Confidential!			


Pow. handle	BAIR X1 PLUS		
Brush head	BAIR X1 PLUS		
Producer	BAIR_China	Product state	Released
Retailer	BAIR_China	User group	Adults

Test date 02/01/2017 **Load** 100g
Date of validation April 2005
Method Bürstzeit: 30 sek.; Bürstzyklen: 2U/Min.; Zahnbürstenposition: x: 12 mm, y: 58.5 mm
 Planimetr.Auswertung mit Graugrenze, Grenzwert: 107
 Angabe in %

Modell		Horizontal movement				Vertical movement				Circular movement			
		Zahn 4	Zahn 5	Zahn 6	Zahn 7	Zahn 4	Zahn 5	Zahn 6	Zahn 7	Zahn 4	Zahn 5	Zahn 6	Zahn 7
Buccal	1	94.68	80.20	93.77	96.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	66.92	92.06	88.44	92.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	55.75	91.66	88.47	97.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	92.72	90.31	94.45	96.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distal	1	12.22	0.00	6.88	4.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	8.49	18.49	0.25	7.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.17	6.55	3.87	10.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	62.61	5.52	0.51	18.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mesial	1	17.75	1.16	25.62	3.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	3.98	10.17	1.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	13.81	12.60	10.37	29.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	38.68	61.27	37.43	10.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1	61.29	44.93	56.43	52.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	40.78	53.85	57.69	51.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	31.47	49.36	55.61	57.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	70.88	61.01	62.42	56.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 models each	Buccal	77.52	88.56	91.29	95.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Distal	20.88	7.64	2.88	9.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mesial	18.56	21.30	18.75	10.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	M + D	19.72	14.47	10.81	10.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	51.11	52.29	58.04	54.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 teeth in 4 models each	Buccal	88.21				0.00				0.00			
	Distal	10.34				0.00				0.00			
	Mesial	17.37				0.00				0.00			
	M + D	13.86				0.00				0.00			
	Total	54.03				0.00				0.00			



Raw data table for BAIR X6:

 University of Zurich ^{UZH} Center of Dental Medicine Clinic of Preventive Dentistry, Periodontology and Cariology	Tooth surface contact	
	Brush #	1488
	Startdate	02/15/2017
	Confidential!	

Pow. handle	BAIR X6	Product state	Released
Brush head	BAIR X6	User group	Adults
Producer	BAIR_China		
Retailer	BAIR_China		


Test date 02/15/2017 **Load** g
Date of validation
Method Bürstzeit: 30 Sek.; Bürstzyklen: 2U/Min.; Zahnbürstenposition: x: 12 mm, y: 67.0mm
 Planimetr.Auswertung mit Graugrenze, Grenzwert: 107
 Angabe in %

Modell		Horizontal movement				Vertical movement				Circular movement			
		Zahn 4	Zahn 5	Zahn 6	Zahn 7	Zahn 4	Zahn 5	Zahn 6	Zahn 7	Zahn 4	Zahn 5	Zahn 6	Zahn 7
Buccal	1	92.37	93.79	81.08	81.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	82.17	79.34	72.98	78.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	76.81	87.96	73.70	84.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	81.13	73.52	86.63	87.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distal	1	5.12	15.35	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	7.78	13.65	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.69	11.97	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	0.45	9.50	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mesial	1	25.56	32.57	45.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	4.66	6.93	5.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	12.70	6.43	6.63	16.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	16.03	6.25	20.88	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1	60.01	62.54	54.09	43.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	49.46	45.39	48.15	42.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	42.11	47.10	45.26	45.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	43.47	40.02	53.85	45.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 models each	Buccal	83.13	83.66	78.61	82.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Distal	3.52	12.62	0.12	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mesial	14.74	13.05	19.58	4.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	M + D	9.13	12.84	9.85	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	48.77	48.77	50.34	44.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 teeth in 4 models each	Buccal	82.07				0.00				0.00			
	Distal	4.15				0.00				0.00			
	Mesial	12.89				0.00				0.00			
	M + D	8.52				0.00				0.00			
	Total	48.01				0.00				0.00			





Raw data table for BAIR K5 (transitional dentition):

 University of Zurich^{UZH}	Center of Dental Medicine Clinic of Preventive Dentistry, Periodontology and Cariology	Tooth surface contact	
		Brush #	1485
		Startdate	02/03/2017
Confidential!			

Pow. handle	BAIR K5 Children (Wechselgebiss)		
Brush head	BAIR K5 Children (Wechselgebiss)		
Producer	BAIR_China	Product state	Released
Retailer	BAIR_China	User group	Children


Test date 02/02/2017 **Load** 100g
Date of validation April 2005
Method Bürstzeit: 30 Sek.; Bürstzyklen: 2U/Min.; Zahnbürstenposition: x: 12 mm, y: 58.5 mm
 Planimetr.Auswertung mit Graugrenze, Grenzwert: 107
 Angabe in %

Modell	Horizontal movement				Vertical movement				Circular movement				
	Zahn 3	Zahn 4	Zahn 5	Zahn 6	Zahn 3	Zahn 4	Zahn 5	Zahn 6	Zahn 3	Zahn 4	Zahn 5	Zahn 6	
Buccal	1	98.89	96.37	99.86	98.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	99.20	99.71	93.39	97.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	96.16	99.06	94.00	94.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	99.64	99.27	96.84	92.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distal	1	53.28	6.60	28.31	13.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	49.73	59.75	4.34	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	59.78	61.52	1.46	74.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	18.16	39.58	13.72	75.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mesial	1	62.62	62.69	19.61	41.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	87.26	56.98	24.17	88.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	24.12	29.31	48.99	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	74.53	44.19	43.71	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1	88.76	78.84	74.09	73.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	91.66	82.67	68.45	79.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	83.38	77.61	68.83	76.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	85.96	76.99	74.64	75.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 models each	Buccal	98.48	98.61	96.02	95.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Distal	45.24	41.87	11.96	41.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mesial	62.14	48.30	34.12	32.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	M + D	53.69	45.08	23.04	36.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	87.44	79.03	71.51	76.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 teeth in 4 models each	Buccal	97.21				0.00				0.00			
	Distal	35.05				0.00				0.00			
	Mesial	44.32				0.00				0.00			
	M + D	39.68				0.00				0.00			
	Total	78.56				0.00				0.00			





Raw data table for BAIR K5 (periodontitis affected dentition):

 University of Zurich^{UZH}	Center of Dental Medicine Clinic of Preventive Dentistry, Periodontology and Cariology	Tooth surface contact	
		Brush #	1484
		Startdate	02/03/2017
Confidential!			

Pow. handle	BAIR K5 children (Paro-Gebiss)		
Brush head	BAIR K5 children (Paro-Gebiss)		
Producer	BAIR_China	Product state	Released
Retailer	BAIR_China	User group	Children

Test date 02/02/2017 **Load** g
Date of validation April 2005
Method Bürstzeit: 30 Sek.; Bürstzyklen: 2U/Min.; Zahnbürstenposition: x: 12 mm, y: 58.5 mm
 Planimetr.Auswertung mit Graugrenze, Grenzwert: 107
 Angabe in %

Modell	Horizontal movement				Vertical movement				Circular movement				
	Zahn 3	Zahn 4	Zahn 5	Zahn 6	Zahn 3	Zahn 4	Zahn 5	Zahn 6	Zahn 3	Zahn 4	Zahn 5	Zahn 6	
Buccal	1	97.35	95.57	97.47	86.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	98.58	98.35	96.86	95.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	98.38	100.00	97.79	96.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	99.56	99.97	95.57	98.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distal	1	26.81	27.29	14.19	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	40.57	42.42	2.62	18.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	38.12	61.54	15.49	14.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	36.61	26.46	11.49	22.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mesial	1	54.63	75.24	59.78	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	56.10	58.73	42.96	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	60.44	27.48	50.84	24.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	60.30	71.78	60.61	16.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1	73.47	75.03	69.36	46.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	77.03	74.71	69.52	57.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	73.68	70.50	71.30	56.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	73.20	73.82	70.85	59.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 models each	Buccal	98.47	98.48	96.93	94.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Distal	35.53	39.43	10.95	14.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mesial	57.87	58.31	53.55	11.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	M + D	46.70	48.87	32.25	12.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	74.35	73.52	70.26	55.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean of 4 teeth in 4 models each	Buccal	97.02				0.00				0.00			
	Distal	25.05				0.00				0.00			
	Mesial	45.34				0.00				0.00			
	M + D	35.19				0.00				0.00			
	Total	68.31				0.00				0.00			





Ranking of tested toothbrushes:

Ranked by total-values

ADULT

Power handle	Brush head	Performance level	mesial (%)	bukkal (%)	distal (%)	m & d (%)	total (%)
Broxodent Power+	BROXO Original-Universell	step 3 (max)	64.44	90.01	67.42	65.93	78.82
Sonicare Advance 4002	HX4002/20 Medium	only one	44.39	92.86	43.90	44.14	70.57
BAIR X5 Children		step 1	45.34	97.02	25.05	35.19	68.31
Broxodent 2000	BROXO Original-Universell	step 3 (max)	33.07	88.99	22.60	27.84	61.00
Oral-B Professional Care 9500 DLX	Pro Bright EB 18	clean	21.05	85.74	12.58	16.81	54.17
BAIR X1 PLUS		clean	17.37	88.21	10.34	13.86	54.03
Sonicare Elite e9000 Serie	Mini-Bürstenkopf	maximum	14.66	87.50	6.67	10.67	52.22
Sonicare Elite 7000	HX7002/20	maximum	20.93	82.89	10.29	15.61	51.89
BAIR X6		Clean	12.89	82.07	4.15	8.52	48.01
Oral-B Professional Care 9500 (Triumph)	MicroPulse EB 25	clean	5.10	74.55	1.43	3.26	41.60
Oral-B Sonic complete	CrissCross/Power Tip	clean	3.88	70.57	0.36	2.12	38.75
Oral-B Vitality Sonic	Flexi Soft EB 17-2	only one	4.33	68.41	2.48	3.41	38.40
Nais DentaCare Sonodent	Float-Brush EW0920	maximum	10.54	61.71	6.65	8.60	37.14
Waterpik SenSonic SR-801	Model SRBL-21 (klein)	maximum	8.90	62.82	4.95	6.92	36.91
Oral-B Professional Care 8500	Flexi Soft EB 17-2	maximum	3.36	64.48	1.27	2.32	35.64
Candida Expert Flexible	FLEXIBLE-Bürstenkopf	Active setting	12.82	53.86	8.76	10.79	34.04
Trisa Sonicpower	Klickbürste	only one	13.23	49.01	8.73	10.98	31.44
Waterpik SenSonic SR-800	Model SRBL-21 (gross)	maximum	0.36	56.43	0.31	0.34	30.26
Philips Sensiflex 2000series	oszillierend mit Active Tip	maximum	0.78	50.35	1.28	1.03	27.42
Blend-a-dent Medic Control	blend-a-dent MEDIC soft	only one	1.86	37.18	0.89	1.37	20.40
Waterpik Synchro Sonic	Model SRBL-21 (gross)	maximum	1.42	33.93	0.50	0.96	18.64
Oral-B Vitality Precision Clean	CrissCross/Power Tip	only one	0.63	26.43	0.06	0.35	14.35
Intronic Sonic	Intronic-Aufsteckbürste	only one	0.03	4.92	0.19	0.11	2.67



CHILDREN

Power handle	Brush head	Performance level	mesial (%)	bukkal (%)	distal (%)	m & d (%)	total (%)
Sonicare Advance 4002	5-row small US commercial	only one	50.42	98.86	39.89	45.16	73.99
BAIR K5 Children		step 1	44.32	97.21	35.05	39.68	78.56
Trisa Sonic power KID	Trisa Sonic power KID	only one	28.34	95.39	29.71	29.03	74.09
Philips Sonicare For Kids	Philips Sonicare For Kids	only one	23.14	83.72	12.15	17.65	63.05

Ranking of the three tested powered toothbrushes and other marketed powered toothbrushes according to their cleaning potential (%) of the total tooth surfaces (last column). The tested toothbrushes are marked in red. Higher values indicates a better cleaning potential.



Ranking of tested toothbrushes:

Ranked by m&d-values

ADULT

Power handle	Brush head	Performance level	mesial (%)	bukkal (%)	distal (%)	m & d (%)	total (%)
Broxodent Power+	BROXO Original-Universell	Stufe 3 (max)	64.44	90.01	67.42	65.93	78.82
Sonicare Advance 4002	HX4002/20 Medium	einzig	44.39	92.86	43.90	44.14	70.57
BAIR X5 Children		Stufe 1	45.34	97.02	25.05	35.19	68.31
Broxodent 2000	BROXO Original-Universell	Stufe 3 (max)	33.07	88.99	22.60	27.84	61.00
Oral-B Professional Care 9500 DLX	Pro Bright EB 18	Clean	21.05	85.74	12.58	16.81	54.17
Sonicare Elite 7000	HX7002/20	maximal	20.93	82.89	10.29	15.61	51.89
BAIR X1 PLUS		Clean	17.37	88.21	10.34	13.86	54.03
Trisa Sonicpower	Klickbürste	einzig	13.23	49.01	8.73	10.98	31.44
Candida Expert Flexible	FLEXIBLE-Bürstenkopf	Active-Einstellung	12.82	53.86	8.76	10.79	34.04
Sonicare Elite e9000 Serie	Mini-Bürstenkopf	maximal	14.66	87.50	6.67	10.67	52.22
Nais DentaCare Sonodent	Float-Brush EW0920	maximal	10.54	61.71	6.65	8.60	37.14
BAIR X6		Clean	12.89	82.07	4.15	8.52	48.01
Waterpik SenSonic SR-801	Model SRBL-21 (klein)	maximal	8.90	62.82	4.95	6.92	36.91
Oral-B Vitality Sonic	Flexi Soft EB 17-2	einzig	4.33	68.41	2.48	3.41	38.40
Oral-B Professional Care 9500 (Triumph)	MicroPulse EB 25	Clean	5.10	74.55	1.43	3.26	41.60
Oral-B Professional Care 8500	Flexi Soft EB 17-2	maximal	3.36	64.48	1.27	2.32	35.64
Oral-B Sonic complete	CrissCross/Power Tip	Clean	3.88	70.57	0.36	2.12	38.75
Blend-a-dent Medic Control	blend-a-dent MEDIC soft	einzig	1.86	37.18	0.89	1.37	20.40
Philips Sensiflex 2000series	oszillierend mit Active Tip	maximal	0.78	50.35	1.28	1.03	27.42
Waterpik Synchro Sonic	Model SRBL-21 (gross)	maximal	1.42	33.93	0.50	0.96	18.64
Oral-B Vitality Precision Clean	CrissCross/Power Tip	einzig	0.63	26.43	0.06	0.35	14.35
Waterpik SenSonic SR-800	Model SRBL-21 (gross)	maximal	0.36	56.43	0.31	0.34	30.26
Intronic Sonic	Intronic-Aufsteckbürste	einzig	0.03	4.92	0.19	0.11	2.67



CHILDREN

Power handle	Brush head	Performance level	mesial (%)	bukkal (%)	distal (%)	m & d (%)	total (%)
Sonicare Advance 4002	5-row small US commercial	einzig	50.42	98.86	39.89	45.16	73.99
BAIR K5 Children		Stufe 1	44.32	97.21	35.05	39.68	78.56
Trisa Sonic power KID	Trisa Sonic power KID	einzig	28.34	95.39	29.71	29.03	74.09
Philips Sonicare For Kids	Philips Sonicare For Kids	einzig	23.14	83.72	12.15	17.65	63.05

Ranking of the three tested powered toothbrushes and other marketed powered toothbrushes according to their cleaning potential (%) of the mesial and distal tooth surfaces (second last column). The tested toothbrushes are marked in red. Higher values indicates a better cleaning potential.

