



## Cordless LED Headlamps: A Bright Idea?

**Gordon's Clinical Observations:** In recent years, loupes and headlamps have become widely used in dentistry. Recent CR survey data show that over 90% of respondents use loupes, and nearly 80% use LED headlamps. Cordless headlamps are gaining popularity because of their convenience and comfort. *Cordless headlamps vary significantly; CR staff compare them for you in this article.*

Cordless headlamps seem convenient; making donning and removing loupes simple, and eliminating any risk of snagged cords. However, this convenience comes at a cost. Cordless headlamps have a shorter battery life, place more weight on the head, and have lower (and fewer) intensity settings. **This report compares current cordless dental headlamps and discusses the advantages and disadvantages of going cordless.**



Are cordless headlamps right for you? (Orascope XV1 shown)

### Comparison of Cordless LED Headlamps

CR compared nine different brands of cordless headlamps (listed alphabetically by company). **Headlamp manufacturers are limited by 3 variables: battery life, light intensity, and weight.** Each manufacturer carefully manipulates each variable within the given parameters, resulting a wide variety of headlamps. This is an area of rapid growth, with new models being added to the market routinely.

Product Photo									
<b>Brand Company</b>	PeriOptix Firefly DenMat	Nano Freedom DentLight	Nano Freedom Plus DentLight	LED DayLite Wireless Designs for Vision	LED DayLite Wireless Mini Designs for Vision	Spark Orascope	XV1 Orascope	Odyssey Wireless LED Mini Surgitel	Odyssey Wireless LED Micro Surgitel
<b>Cost</b>	\$1,095	\$998	\$1,098	\$1,195	\$995	\$1,195	\$3,175 (with loupes)	\$1,295	\$1,195
<b>Weight (g)</b>	41g	46g	80g	47g	28g	34g	184g	48g	44g
<b>Controls (infection control)</b>	Twist	Touch Free	Touch Free	Touch	Twist	Touch	Touch	Touch	Touch
<b>Maximum Intensity (lux) at 14" working distance</b>	Low: 19,000 High: 30,000	9,000	Low: 14,000 High: 25,000	Low: 25,000 High: 33,000	22,000	9,000	Low: 14,000 High: 20,000	Low: 17,000 Med: 25,000 High: 32,000	Low: 9,000 Med: 13,000 High: 17,000
<b>Color Temperature</b>	6000K	7500K	6500K	6300K	5400K	9800K	10,000K	4000K	3900K
<b>Spot (high)</b>									
<b>Diameter at 14"</b>	6cm	9cm	7cm	7.2cm	7cm	7cm	7cm	7.2cm	8.4cm
<b>Batteries Used (included)</b>	1 (2)	1 (2)	2 (4)	1 (3)	1 (3)	1 (2)	2 (4)	1 (3)	1 (3)
<b>Average Battery Life (Hours:Minutes)</b>	Low: 2:35 High: 1:30	2:45	Low: 5:45 High: 2:45	Low: 2:45 High: 1:45	1:30	2:55	Low: 5:30 High: 2:45	Low: 3:40 Med: 2:30 High: 1:45	Low: 4:00 Med: 2:30 High: 1:45
<b>Average Recharge Time (2 batteries at one time)</b>	1:40	1:00	1:00	1:00	2:15	1:55 (1 at a time)	1:40	2:00	2:00
<b>Additional Battery Cost</b>	\$295/Pod (battery+light)	\$25/2	\$25/2	\$80	\$50/3	\$150	\$50/2	\$300/3	\$300/3
<b>Low Battery Indicator</b>	Yes, strobing output	No, turns off	No, turns off	Yes, strobing output	No, dims over time	Yes, red indicator light	Yes, red indicator light	Yes, strobing output	Yes, strobing output
<b>Warranty</b>	1 year	2 years (6 mo. battery)	2 years (6 mo. battery)	4 years (1 yr. battery)	4 years (1 yr. battery)	2 years	2 years (1 yr. battery)	2 years (1 yr. battery)	2 years (1 yr. battery)

#### Summary of table:

**Cost and weight:** Cost varied from \$995 to \$3,175, and weight ranged from 28g (headlamp only) to 184g (including loupes).

**Controls:** Most models could be activated relatively aseptically using the back of a gloved hand; two models required twisting to activate.

**Lighting Quality:** Clinicians preferred the option of multiple intensity levels, however most don't adjust once they select a preferred setting. **Individual lighting requirements will vary according to magnification level, working length, and personal preference.** Max intensity and color temperature (14" working distance measured at center of spot) varied from 9,000 lux-33,000 lux and ranged from blue sky (10,000K) to natural white (3900K). For reference, daylight (5500K) is commonly used for shade matching.



\* Battery pod(s) mount to loupe frame temple(s) (Nano Freedom 1 pod, Nano Freedom Plus 2 pods)

† Batteries counter-balanced behind head (see page 1)

## Cordless LED Headlamps: A Bright Idea? *(Continued from page 1)*

### Comparison of Cordless LED Headlamps *(Continued)*

Summary of table *(continued)*:

**Batteries:** Battery life ranged from 1:30 to 5:40. **Headlamps with a longer battery life were heavier, and higher intensities resulted in a shorter battery life.** Recharge time varied from 1:00 to 2:15. Recharge time is ideally shorter than the battery life to facilitate swapping of batteries. Cost of replacement batteries varied from \$25/2 (*battery only*) to \$295 (*battery and light*).

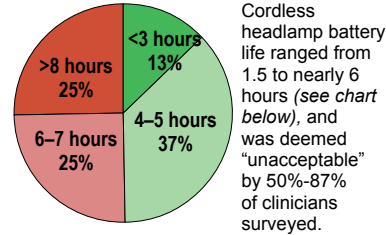
**Low Battery Indicators:** Lights with strobing output were most effective at alerting clinicians of imminent light failure. Small indicator lights on housings were easily overlooked.

### CR Survey *(n = 960)*

- Currently use cordless headlamp: 21%
- Satisfaction with cordless headlamp: 63% very satisfied, 32% satisfied, 5% dissatisfied
- Times battery is recharged per day:

	0	1	2	3+
<b>Corded</b>	79%	19%	2%	0%
<b>Cordless</b>	25%	46%	14%	15%

- Acceptable battery life:



- How do cordless headlamps compare to corded models?

n = 160	Better	Equal	Worse	Don't Know
<b>Lighting Quality</b>	41%	34%	13%	11%
<b>Weight and Comfort</b>	68%	13%	11%	8%
<b>Battery Life</b>	25%	18%	41%	17%
<b>Convenience</b>	85%	6%	2%	7%
<b>Infection Control</b>	44%	43%	1%	12%

### Should You Go Cordless?

**Battery Life:** Cordless headlamps have a significantly shorter battery life than corded models. However, many clinicians easily adapt to a "battery schedule" with help from timers, or by delegating the charging and swapping of batteries to staff members.

**Intensity:** Cordless headlamps are less intense than corded models, however MOST clinicians find cordless models to be adequate. Lighting which is too intense may cause eye strain (see *Clinicians Report August 2016*).

**Weight:** Cordless headlamps place more weight on the head than corded models, however MOST clinicians were unaffected by this increase in weight. If weight is a problem, high quality, comfortable nosepieces and cinch straps can help better distribute weight and increase comfort.

#### CR CONCLUSIONS:

- Cordless headlamps are convenient and eliminate the possibility of snagged cords.
- Clinicians seem undeterred by the increased weight and limited intensities and settings.
- Cordless headlamps are a viable option worth considering. However, the reduced battery life remains a major concern and is a "deal breaker" for many clinicians.
- Next time you snag your headlamp cord and are feeling frustrated, switch to a cordless model. Or just smile, knowing that you won't be changing your battery several times today like some cordless users.

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