

Dear [Editor],

I'd like to make a few observations about the laser article, written by Dr Wertz, in the November issue of 'Advance for Directors in Rehabilitation'.

Whilst it was a well-written article, there are a few misleading statements and generalisations made which may lead the uninformed reader to believe that lasers with output powers under 500mW are ineffective in laser medicine (p34), and that there is evidence supporting the use of higher-powered lasers (p35-36). In both cases these statements are simply untrue.

In the sidebar article (Pointing Lasers to the Future) a statement is attributed to Jan Tuner, MD [sic], leading the average reader to believe that Jan Tunér (DDS) supports the author's argument. Dr Tunér's statement has, however, been taken quite out of context.

Attached is the author's own document that makes the same reference but within the actual context as it was originally written by Dr Tunér (final para, p6), where it refers specifically to Erchonia.

The original statement is made in Dr Tunér's and Lars Hode's book 'Laser Therapy, Clinical Practice and Scientific Background', and also reprinted in the paperback version of the same text (The Laser Therapy Handbook) on page 312. It is a concluding remark in a discussion over three pages (pp310-312), and refers specifically to the Erchonia laser device (5mW 635nm), the way it is promoted, and its specific parameters (which anyone actively involved in the science of laser medicine would agree are less than appropriate for any application other than the healing of open wounds).

The same authors have expressed their doubts about the use of high-power lasers. In fact, when looking at the further statement Dr Wertz has attributed to them in the sidebar piece, the context is somewhat different from that which is inferred by Dr Wertz. The whole paragraph reads as follows:

"The authors used to have certain misgivings about an "inflation" with respect to the output power of therapeutic lasers. One misgiving was, and still is, the obvious risk of eye damage. The need for protective glasses has previously been exaggerated, but it is now becoming more important. Another misgiving is the lack of research in the field of "high-power" therapeutic lasers. So far, insufficient data have been published on these powerful lasers. For the moment, we must rely primarily on our clinical experience..." (p53-55).

It is also interesting to note that Tunér & Hode also speak of laser powers between 100 and 1000mW, and make the points that superficial tissues can easily be overly-stimulated by higher-powered lasers, and that the "spot size of a 1000mW [laser] diode can be made large enough to treat even sensitive areas such as the lip without any sensation of warmth."

This last point is an important one to note, as there are lasers on the market - such as that supplied by Dr Wertz's former employer - with output powers up to 7500mW that, in their supplied form, are potentially quite dangerous. They

rely upon the practitioner to manually maintain the laser aperture at a safe distance from the patient's skin (and thus reduce the incident power density) so as not to cause discomfort and/or injury due to excessive heat.

(Whilst it is also possible to make the spot size of a lower powered laser small enough such that the power density is sufficient to generate heat, the risk of significant injury is very low due to the particularly small spot size that is required.)

Lars Hode also says, in a recent contribution to a laser therapy online chat group, that:

"The classification of a laser (e.g. class 3B or 4) has nothing at all to do with the treatment effects. That classification is only done with regard to the possible eye risks. There is a rule of thumb that for certain wavelengths and exposure times, the limit between class 3B and 4 is set to 500 mW.

There has been an inflation in output powers and that is not entirely good. In our society (SLMS) we have notice more and more adverse effects due to too high dosing - nothing dangerous but still nothing that we want.

I have personally seen - surprisingly enough - very good effects from a 3 mW HeNe laser and 5 mW (average power) GaAs laser and a 10 mW GaAlAs laser. Certainly, you need to use a longer treatment time which to achieve a dose within the useful dose window, but instead you also get a larger dose to the streaming blood cells and lymph liquid and a better systemic effect and this is often overlooked.

The light intensity in the tissue decreases exponentially from the target surface and down in the tissue. Let us assume that 10% of the intensity at the skin surface remain at 4 mm depth. Then you have 1% at 8 mm depth and 0.1% at 1.2 cm depth etc. If we increase the power of the laser probe ten times (e.g. from 100 mW to 1000 mW) using the same configuration, we reach another 4 mm down. Not more. The arguments of Avicenna that they reach 8 cm down is just nonsense, especially for the wavelength they use. But people in general think that: "the stronger, the better" and "the more expensive, the better".

I do not wish to criticize Dr Wertz upon his article, and I do believe higher-powered lasers have a place in the wider field of laser medicine, but I would like the general reader of your publication to be made aware of the actual context of Dr Tunér's and Lars Hode's statements to which Dr Wertz has referred as being supportive of his personal opinion.

Sincerely,

Peter Jenkins