

## 勃起功能障礙的治療

雷射光——一種對勃起功能障礙新的，非侵入的治療：安慰劑控制，單方盲目的先驅研究

來源：[http://www.laser.nu/lllt/lllt\\_editorial11.htm](http://www.laser.nu/lllt/lllt_editorial11.htm)

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### 背景：

在試管和動物研究中已經顯示，雷射的應用可能誘發血管舒張 (vasorelaxation)，導致陰莖勃起。假設我們將雷射應用於陰莖脈管床，可能恢復勃起的功能。

### 目的：

爲了證明這一個假設，一個特殊設計可發出雷射的裝置，適用於勃起功能障礙的病人陰莖外部。這一項研究已經引導證明雷射應用對勃起功能障礙的治療效能和安全。

### 材料和方法：

44 個志願者任意地被分配至安慰組或 808 nm GaAlAs 雷射治療組。39 病人完成了所有的治療而且追蹤拜訪；18 位病人分配至治療組(A)，21 位病人分配至安慰組(B)。一個星期治療兩次，每次雷射照射 19 分鐘，療程總計 6 次。雷射單元是 2 排雷射，每排 5 個治療點，並且應用在陰莖背部脈管床上，每排相對應到陰莖海綿體。一個星期治療兩次，每次 20 分鐘，總計 6-8 次。每個雷射的功率是 150 mW。勃起功能國際索引(IIEF) 問題 3 和 4 則使用來評估勃起功能障礙的改善。

### 結果：

兩組在問題 3 和 4 的中位數基線值一樣是 2.0。安慰組(B)基線值在治療之後問題 3 和 4 仍保持 2.0；治療組(A)則增加 1.5 到 3.5 (問題 3-  $p=0.0536$ ；問題 4-  $p=0.03$ )。中位數勃起功能領域得分 (問題 1-5 和 15) 在安慰組(B)中是 14 並且減少到 12；在治療組(A)基線得分是 13，在治療之後增加到 20.5 ( $p=0.02$ )。治療組(A)的許多病人報告了晨間勃起的發生。通常在第 4 或第 5 次治療之後報告了改善。治療的結果沒有逆向影響。

### 討論和結論：

本項運用雷射參數治療的研究已經顯示對勃起功能障礙的改善；改善期間平均爲 6 個月。需要更進一步的研究是治療參數的最佳化：波長，劑量和療程。

--- 參考以下照片 ---

## Erection - a complex process

The diagram illustrates the physiological process of an erection. On the left, a cross-section of a flaccid penis shows the corpora cavernosa as spongy reservoirs. Labels include: penile veins, penile arteries, corpora cavernosa, penile nerves, and urethra. A text box below states: "The corpora cavernosa are spongy reservoirs waiting to be engorged with blood." Above this diagram are several colored ovals representing factors: Emotions (blue), Hormones (yellow), Brain (red), Nerves (yellow), Bio-chemicals (green), and ATP (pink). A large black arrow points to the right, where a cross-section of an erect penis is shown. The corpora cavernosa are now filled with blood, making the penis rigid. A text box below states: "The rigid corpora are hard enough for insertion during intercourse."

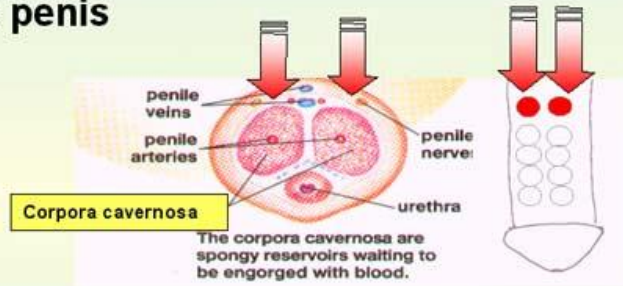
Nerve stimulation relaxes and dilates the smooth muscles walls of the blood vessels in the corpora

## UPTIMUM (a patented device, method and technology)

The photograph shows the UPTIMUM device, which consists of three main parts: a control unit, a treatment unit, and a penis holder. The control unit is a white rectangular box with a digital display and a keypad. The treatment unit is a smaller white box connected to the control unit. The penis holder is a white cylindrical device with a green ring around it, designed to hold the penis during treatment. Labels with lines pointing to each part are: Control unit, Treatment unit, and Penis holder.

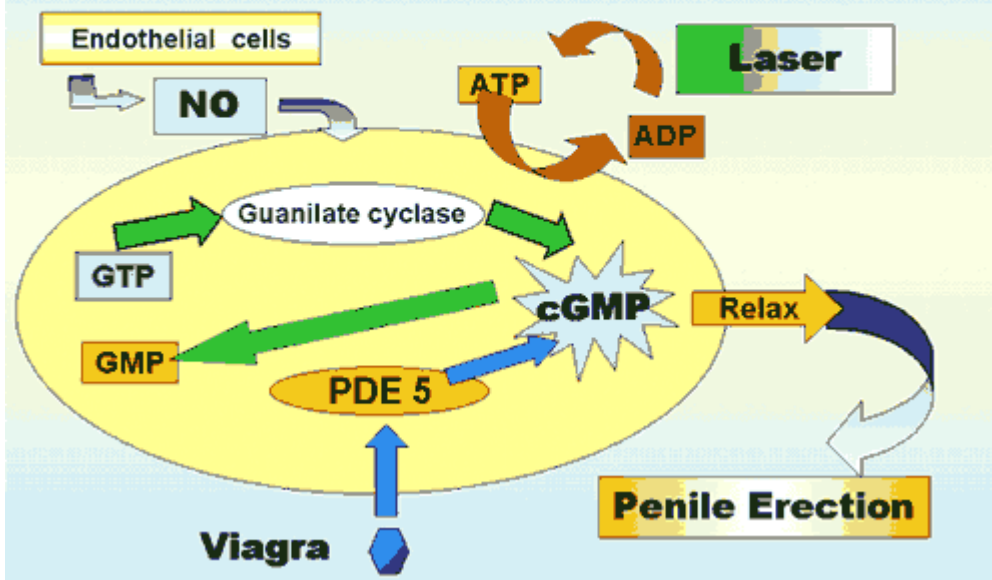
## Technology Principle

- Applying low power laser energy by “scanning” the penis



- Treatment Head allows efficient energy transfer to the Corpora Cavernosa
- Treatment schedule: 6-8 treatments / 20 minutes each

## Presumed laser mechanism of action on smooth muscle



## 附件-1:

### 國際勃起功能評分

多年以來有許多關於 ED(Erectile Dysfunction 勃起功能障礙)的評分標準。目前採用最多的是 1997 年 Rosen 設計的國際勃起功能評分 (International Index of Erectile Function, IIEF)。1998年 Rosen 將 IIEF 的 15 個問題簡化為 5 個問題的 IIEH-5。將 ≤ 21 分診斷為 ED，大於 21 分診斷為無 ED，其敏感度為 98%，特異性為 88%。

#### 勃起功能國際問卷 (IIEF-5) (IPSS)

請根據過去 6 個月內的情況評估：

項次	項目	0	1	2	3	4	5	得分
1	對陰莖勃起及維持勃起有多少信心		很低	低	中等	高	很高	
2	受到性刺激後，有多少次陰莖能堅挺地進入陰道	無性活動	幾乎沒有或完全沒有	只有幾次	有時或大約一半時候	大多數時候	幾乎每次或每次	
3	性交時，有多少次能在進入陰道後維持陰莖勃起	沒有嘗試性交	幾乎沒有或完全沒有	只有幾次	有時或大約一半時候	大多數時候	幾乎每次或每次	
4	性交時，保持勃起至性交完畢有多大困難	沒有嘗試性交	非常困難	很困難	有困難	有點困難	不困難	
5	嘗試性交時是否感到滿足	沒有嘗試性交	幾乎沒有或完全沒有	只有幾次	有時或大約一半時候	大多數時候	幾乎每次或每次	
15	最近 4 周內陰莖勃起及維持勃起的自信程度？		很低	低	中等	高	很高	

附件-2: 原文

## Treatment for Erectile Dysfunction

Original from Internet ----- [http://www.laser.nu/lllt/lllt\\_editorial11.htm](http://www.laser.nu/lllt/lllt_editorial11.htm)

### **Laser light - a new, non-invasive treatment for Erectile Dysfunction: a placebo-controlled, single blinded pilot study**

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#### ***Background:***

In vitro and animal studies have shown that the application of laser light may induce vasorelaxation, which is the event that produces penile erection. The hypothesis was that application of laser light to the vascular bed of the penis might restore erectile function.

#### ***Purpose:***

To prove this hypothesis, a specifically designed device, emitting laser light, was externally applied to the penis of patients with erectile dysfunction (ED). This study has been conducted to prove the efficacy and safety of laser therapy for the treatment of ED.

#### ***Material and Methods:***

44 volunteers were randomly assigned to treatment with placebo or 808 nm GaAlAs laser light. 39 patients completed all treatments and follow up visit: 18 patients in the treatment group (A) and 21 in the placebo group (B). The treatments were delivered for 19 minutes, twice a week, total of 6 treatment sessions. The laser unit has 2 rows of 5 treatment points each and the unit is applied on the dorsal aspect of the penis, every row corresponds to the corpus cavernosum of the penis. Treatment is given for 20 minutes, twice a week, 6-8 times. Power of each diode is 150 mW. Questions 3 and 4, as well as the

Erectile Function Domain from the International Index of Erectile Function (IIEF) assessed the improvement in ED.

### ***Results:***

The baseline median values for questions 3 and 4 were identical in both groups - 2.0. In group B the median remained 2.0 after the treatment for question 3 and 4 while in group A it increased by 1.5 to 3.5 (for question 3 -  $p=0.0536$ ; for question 4 -  $p=0.03$ ). Median Erectile Function domain score (question 1-5 and 15) was 14 in group B and decreased to 12. In group A baseline score was 13 and it increased to 20.5 after treatment ( $p=0.02$ ). Many patients in the treatment group reported occurrence of morning erections. Improvements were usually reported after the 4th or 5th treatment sessions. There were no adverse effects as a result of the treatment.

### ***Discussion and Conclusion:***

The treatment performed by the laser parameters used in this study has showed improvement in ED. The improvement duration in average was of 6 month. Further studies are needed for optimization of treating parameters: wavelength, dose and sessions.