

ESWT- Kliniske implikationer



Effekten af ESWT

Peter Lyngdorf

ESWT- Kliniske implikationer



**Er behandling med ESWT
effektiv?**

Energi kilde



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**Er behandling med ESWT
effektiv?**

Energi kilde

Styrke

Antal behandlinger

Antal shocks pr. behandling

Frekvens

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**Er behandling med ESWT
effektiv?**

Parametre:

IIEF-ED/5

EHS

Can Low-Intensity Extracorporeal Shockwave Therapy Improve Erectile Function? A 6-Month Follow-up Pilot Study in Patients with Organic Erectile Dysfunction.

Yoram Vardi et al.

Eur Urol 2010;58:243



No. 20 mænd

PDE-5 I: Responders

IIEF og EHS

**Behandling strategi: 12 beh.
over 9 uger, 1500 shocks**

Energi: 0,09 mJ/mm²

Can Low-Intensity Extracorporeal Shockwave Therapy Improve Erectile Function? A 6-Month Follow-up Pilot Study in Patients with Organic Erectile Dysfunction.

Yoram Vardi et al.

Eur Urol 2010;58:243



IIEF-ED

Før

FU-1

FU-2 (6 mdr.)

13,5

20,9

20,8

EHS

1,5

2,7

Low-Intensity Extracorporeal Shock Wave Therapy—A Novel Effective Treatment for Erectile Dysfunction in Severe ED Patients Who Respond Poorly to PDE5 Inhibitor Therapy.
Ilan Gruenwald, MD, Boaz Appel, MD, and Yoram Vardi, MD
JSM 2012;9:259



No. 29 mænd

PDE-5 I: Non-responders

IIEF og EHS

**Behandling strategi: 12 beh.
over 9 uger, 1500 shocks**

Energi: 0,09 mJ/mm²

Low-Intensity Extracorporeal Shock Wave Therapy—A Novel Effective Treatment for Erectile Dysfunction in Severe ED Patients Who Respond Poorly to PDE5 Inhibitor Therapy.
Ilan Gruenwald, MD, Boaz Appel, MD, and Yoram Vardi, MD
JSM 2012;9:259



IIEF-ED

Før

FU-1

FU-2+PDE-5-I

8,8

12,3

18,8

EHS > 2

0

10

21

Does Low Intensity Extracorporeal Shock Wave Therapy Have a Physiological Effect on Erectile Function? Short-Term Results of a Randomized, Double-Blind, Sham Controlled Study
Yoram Vardi,^{*},[†] Boaz Appel, Amichai Kilchevsky and Ilan Gruenwald. *J Urol* 2012;187:1769



No. 77 mænd

PDE-5 I: responders

IIEF > 19

**Behandling strategi: 12 beh.
over 9 uger, 1500 shocks**

Energi: 0,09 mJ/mm²

Does Low Intensity Extracorporeal Shock Wave Therapy Have a Physiological Effect on Erectile Function? Short-Term Results of a Randomized, Double-Blind, Sham Controlled Study
Yoram Vardi,^{*},[†] Boaz Appel, Amichai Kilchevsky and Ilan Gruenwald. *J Urol* 2012;187:1769



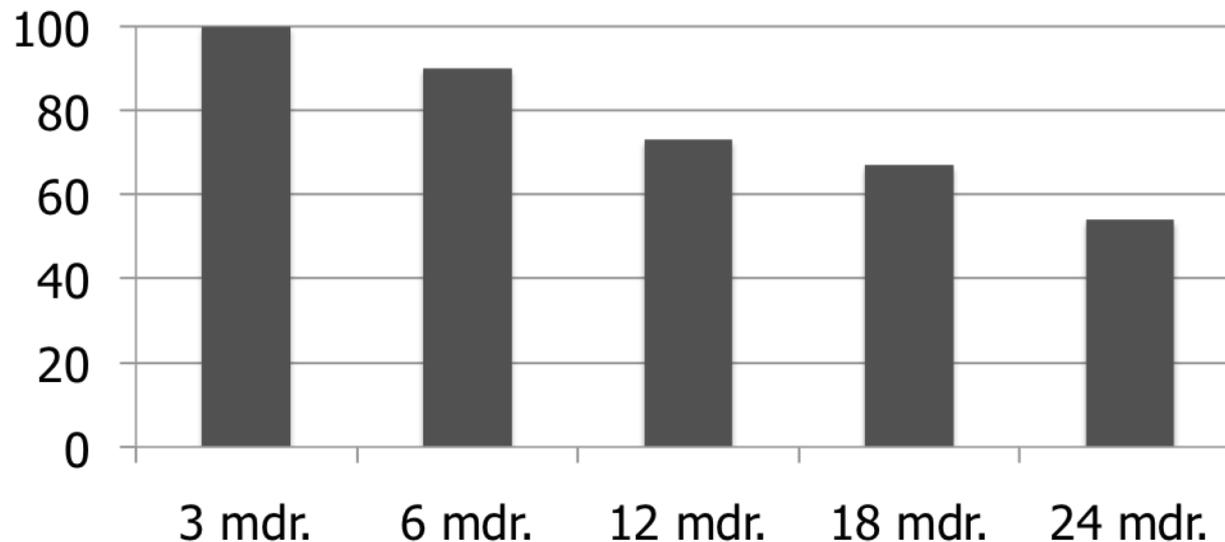
IIEF

| | Før | FU | IIEF-ED>5 |
|----------------|-------------|-------------|---------------------|
| ESWT | 12,6 | 19,3 | 26 ptt. |
| Placebo | 11,5 | 14,4 | 4 ptt. |

Low-intensity shockwave treatment (LIST) for ED

Follow-up of two years.

Vardi Y, Appel B, Kitrey ND, Massarwa O, Gruenwald I
ESSM 2013



Procentuelt fald i IIEF-ED

Extracorporeal shockwave therapy in the treatment of erectile dysfunction: a prospective, randomized, double-blinded, placebo controlled study.

Yee et al.

Int J Urol 2014;21:1041.



No. 58 mænd

Alder: ESWT: 59 PI: 63,4

PDE-5 I: N/A

IIEF og EHS

**Behandling strategi: 12 beh.
over 9 uger, 1500 shocks**

Energi: 0,09 mJ/mm²

Extracorporeal shockwave therapy in the treatment of erectile dysfunction: a prospective, randomized, double-blinded, placebo controlled study.

Yee et al.

Int J Urol 2014;21:1041.



IIEF-ED

| | Før | FU-1 mdr. |
|----------------|----------------|------------------|
| ESWT | 10,2 | 17,8 |
| Placebo | 10,2 | 15,8 |
| | p 0,156 | |

Extracorporeal shockwave therapy in the treatment of erectile dysfunction: a prospective, randomized, double-blinded, placebo controlled study.

Yee et al.

Int J Urol 2014;21:1041.



EHS

| | Før | FU-1 mdr. |
|----------------|----------------|------------------|
| ESWT | 1,4 | 2,7 |
| Placebo | 1,4 | 2,4 |
| | p 0,163 | |

**Low intensity extracorporeal shockwave therapy for
erectile dysfunction: a study in an Indian population.
Srini VS, Reddy RK, Schultz T, Denes B.
*Can J Urol 2015;22:7614***



Randomiseret us.

No: 135 mænd 95 ESWT, 40 PI

Alder ?

PDE-5-I: ?

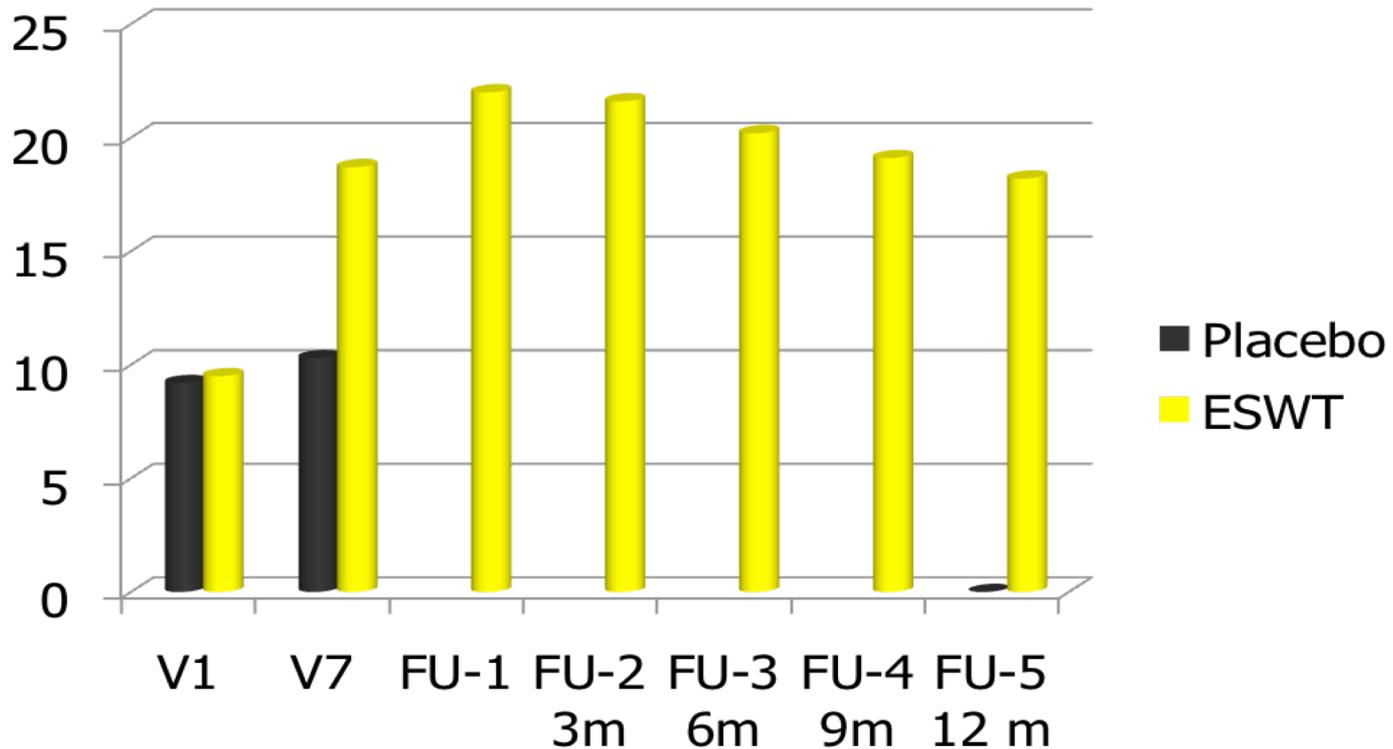
Comorbiditet ?

IIEF-ED og EHS

Behandlingsstrategi

Low intensity extracorporeal shockwave therapy for erectile dysfunction: a study in an Indian population.
Srini VS, Reddy RK, Schultz T, Denes B.
Can J Urol 2015;22:7614

Data for ESWT 60 og PI 17



**Initial experience with linear shock wave treatment for
erectile dysfunction: a 6 month follow-up pilot study**

Reisman Y et al.

Int J Imp Res 2015;27:108



No. 58 mænd

Alder: 57 år

PDE-5 I: Non-responders 14 %

IIEF

Behandling strategi: 4 beh. 1

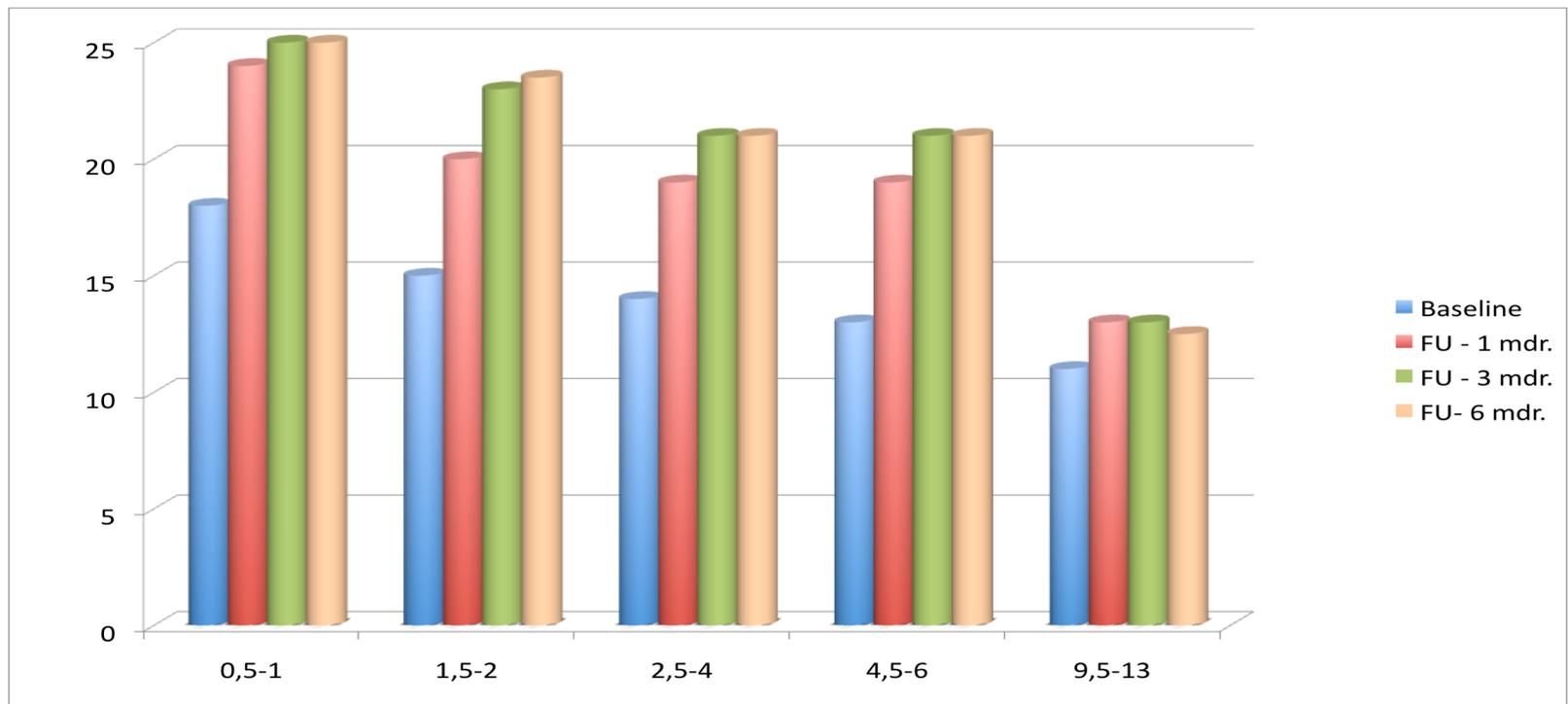
uges interval. 3600 shocks

Energi: 0,09 mJ/mm²

Initial experience with linear shock wave treatment for erectile dysfunction: a 6 month follow-up pilot study

Reisman Y et al.

Int J Imp Res 2015;27:108



Ændring i IIEF-5 afhængig af varighed

**Efficacy and safety of linear focused shockwaves for
erectile dysfunction – A second generation technology**

Reisman et al.

MESSM 2013



No. 57 mænd (4 centre)

PDE-5 I: N/A

IIEF

**Behandling strategi: 4 beh. 1
uges interval, 3600 shocks**

Energi: 0,09 mJ/mm²

Efficacy and safety of linear focused shockwaves for erectile dysfunction – A second generation technology

Reisman et al.

MESSM 2013



IIEF-ED

Før

14,7

FU-3 mdr.

21,6

Can low-intensity extracorporeal shockwave therapy improve erectile dysfunction? A prospective, randomized, double-blind, placebocontrolled study.

Olsen A et al.

Scand J Urol 2014;49:329.



No. 112 mænd

Alder: 60 år

PDE-5 I: Responders

IIEF<20 og EHS<2

**Behandling strategi: 5 beh. 1
uges interval, 3000 shocks**

Energi: 0,15 mJ/mm²

Can low-intensity extracorporeal shockwave therapy improve erectile dysfunction? A prospective, randomized, double-blind, placebocontrolled study.

Olsen A et al.

Scand J Urol 2014;49:329.



| | ESWT | Placebo |
|------------------------|-------------|----------------|
| EHS | | |
| 3-4 | 57 % | 9 % |
| IIEF-ED | | |
| <5 | 51 % | 63 % |
| >5 og <10 | 34 % | 22 % |
| >9 | 9 % | 16 % |

Evaluation of clinical efficacy, safety and patient satisfaction rate after low-intensity extracorporeal shock wave therapy for the treatment of male erectile dysfunction: An Australian first open-label single arm prospective clinical trial.

Chrung E, Cartmill .

BJU Int 2015;115:46.



No. 30 mænd

Alder: 56 år

PDE-5 I: Non-responders

IIEF-5 > 11

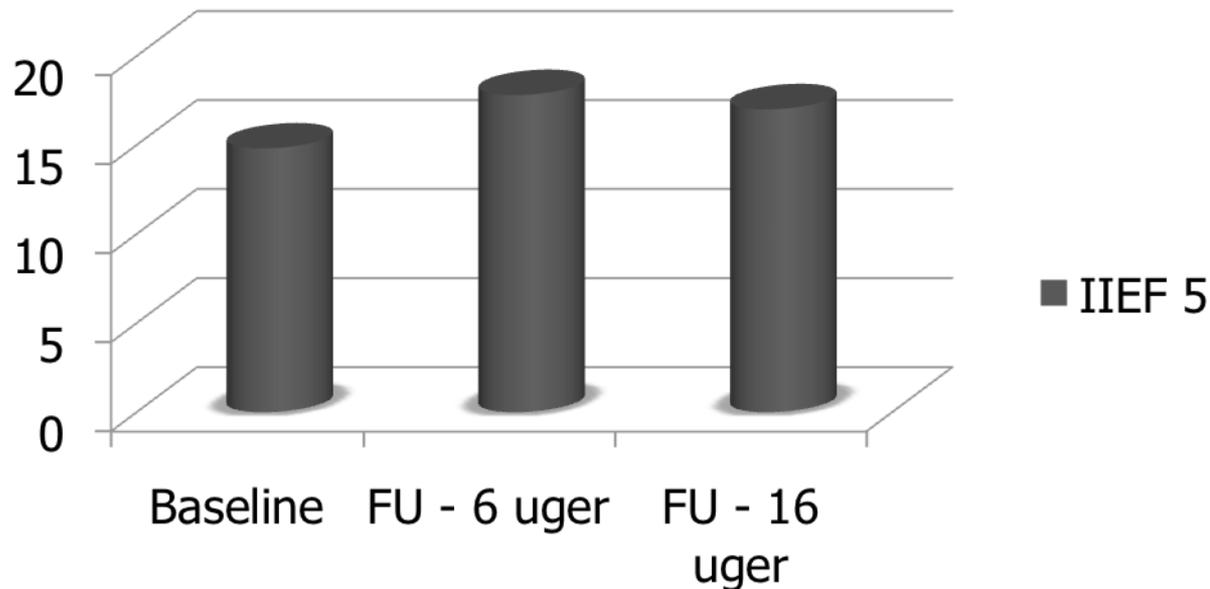
Behandling strategi: 12 beh. i 6 uger. 3000 shocks pr. beh.

Energi: 0,25 mJ/mm²

Evaluation of clinical efficacy, safety and patient satisfaction rate after low-intensity extracorporeal shock wave therapy for the treatment of mild erectile dysfunction: An Australian first open-label single arm prospective clinical trial.

Chung E, Cartmill .

BJU Int 2015;115:46.



IIEF-5 > 5: 18 ptt.

EHS 3-4: 15 ptt.

New treatment in erectile dysfunction and first clinical trial.

**Prieto R et al.
*ISMST 2015***



No. 30 mænd

Alder: 53 år

PDE-5-I: Non-responders

IIEF-ED < 15

**Behandling strategi: 5 beh. 1
uge interval. 5000 shocks pr.
beh.**

Energi: 0,051 mJ/mm²

New treatment in erectile dysfunction and first clinical trial.

Prieto R et al.

ISMST 2015



IIEF-ED

Baseline: 11,1

FU-4 uger: 22

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Hvordan kommer vi videre?

Nye spørgsmål



Virkningsmekanisme

Hvilken applikator?

Protokol:

Antal behandling

Antal shock pr. beh.

Energi

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Antal shock pr. behandling: 2.000

Antal behandlinger: 6-12

Antal beh. pr. uge: 2

Energi: 0,08 – 0,11 mJ/mm²

Nye spørgsmål



Hvad skal måles?

Parametre (IIEF, EHS etc.)

Udvælgelse af patienter

Forebyggende behandling

Nye spørgsmål



Hvordan kommer vi videre?

Randomiserede studier

Head-to-head studier?

CPPS



1 RCT, 60 ptt.

3.000 shock x 4

Forbedring af QoL, Pain score,

Ingen forskel i IIEF, IPSS

Peyronies sygdom



RCT: 102 ptt.

2.000 shock x 6

Smertereduktion:

ESWT: 17/20, Placebo: 12/25

Penile deviation: Ingen forskel

Forværring:

ESWT 20/50, placebo: 12/49



Introduction

Shockwave History

Physical principles of ESWT

Indications

ISMST Recommendations

New perspective on ESWT

About ESWT

Consensus statement Recommendations for the use of extracorporeal shockwave technology in medical indications

[Terms and definitions»](#)

[Download the Consensus statement»](#)

Abstracts

Extracorporeal generated shock waves have been introduced for medical therapy approximately 20 years ago to disintegrate kidney stones. Since this time shock waves have changed the treatment of urolithiasis substantially. Today shock waves are the first choice to treat kidney and ureteral stones. A new indication in Urology is the shock wave treatment of IPP where first clinical investigations show promising results. Urology is not the only medical field for shock waves in medicine. Meanwhile shock waves have used in Orthopedics and Traumatology to treat insertion tendinitis, non- or delayed unions, avascular necrosis of the head of femur

Abstracts

Extracorporeal generated shock waves have been introduced for medical therapy approximately 20 years ago to disintegrate kidney stones. Since this time shock waves have changed the treatment of urolithiasis substantially. Today shock waves are the first choice to treat kidney and ureteral stones. A new indication in Urology is the shock wave treatment of IPP where first clinical investigations show promising results. Urology is not the only medical field for shock waves in medicine. Meanwhile shock waves have been used in Orthopedics and Traumatology to treat insertion tendinitis, non- or delayed unions, avascular necrosis of the head of femur and other necrotic bone alteration. Another field of shock wave application is the treatment of tendons, ligaments and bones on horses in veterinary medicine. The idea of the shock wave therapy for orthopedic diseases is the stimulation of healing processes in tendons, surrounding tissue and bones. This is a completely different approach compared to urology where shock waves were used for disintegration. This paper gives an overview of basic physical principles of shock waves, history and basic research of shock wave application in medicine.

Introduction and prerequisites and minimal standards of performing ESWT

In order to prevent improper treatment, the following list contains the minimum prerequisites and standard examinations performing ESWT:

1. Clinical examination
2. Radiological imaging
3. Neurological and/or laboratory-diagnostic tests and/or other investigations may be necessary to corroborate the diagnosis.

Only a qualified physician (certified by National or International Societies) may use focused shockwave therapy to treat pathologies, which have been determined by diagnostic testing.

For the treatment on bones, a high-energy, focused shockwave with positioning technology has to be used.

In accordance with most scientific evidence ISMST recommends to use focused generators and high energy

