

Therapeutic Ultrasound for Peyronie's Disease in Prostate Cancer:

A novel, non-invasive approach to treatment.

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Introduction:

Peyronie's Disease (PD) is a debilitating condition characterised by penile pain, curvature and deformity, palpable plaque formation and erectile dysfunction (1). Aetiology may be variable but is generally linked to trauma affecting the penis, causing local inflammation, inelastic scar tissue development and fibrosis of the tunica albuginea leading to calcified plaques, altered penile appearance and sexual dysfunction (1,2).

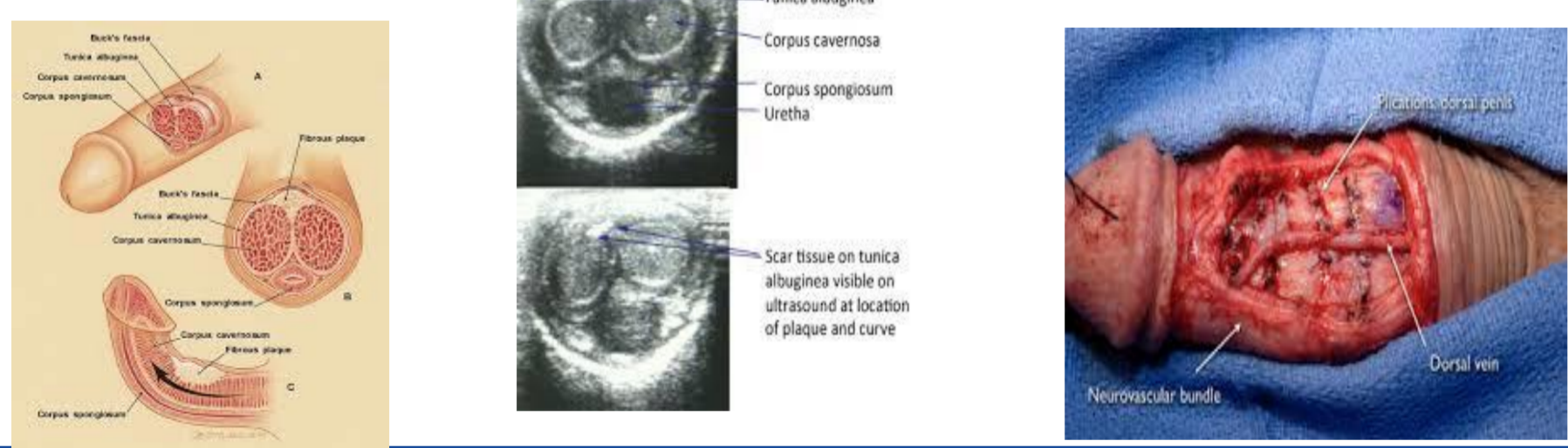


- PD occurs:
 - in 3-9% of the normal population
 - In 16 % of men following treatment for prostate cancer (PCa)

PD can greatly impact on male self esteem, (3) leading to relationship issues (54%), psychological distress (81%), depression (48%), relationship breakdown (3) and an associated increased risk of suicide (3). In prostate cancer populations there is enhanced risk (4).

Aim:

Following radical prostatectomy (RP), 16% of men acquire Peyronie's disease (PD) causing pain and curvature of the penis (5). Lesser known, but seen clinically, PD may also develop after external beam radiation therapy (EBRT) for Prostate Cancer (PCa). Therapeutic Ultrasound (TUS) is a non-invasive treatment for soft tissue injuries, however research for its in PD is limited (6). Surgical correction is the gold standard however, this may result in further penile shortening and scar tissue (7).



Methods:

Ten men (8 = RP, 2 = EBRT) with a history of PD following treatment for PCa were participants in this study assessing the effect of TUS. Each participant underwent Penile Duplex Doppler Ultrasound (PDDU) pre- and post-intervention to confirm PD, tunica fibrosis and plaque formation as well as completing the Peyronie's disease Questionnaire (PDQ) and IIEF-5. Twelve TUS sessions were provided over 4-6 weeks utilising 1.5-2.5 W/cm², 3 MHz x 10mins/session.



- #### Therapeutic Ultrasound
- 3 sessions /week x 4 weeks =12 doses
 - 3MHz ultrasound probe x10 mins / Rx
 - 1.5-2.5w/cm2 applied directly to the penis
 - Condom over probe
 - TUS directed to region of fibrosis as confirmed by PDDU

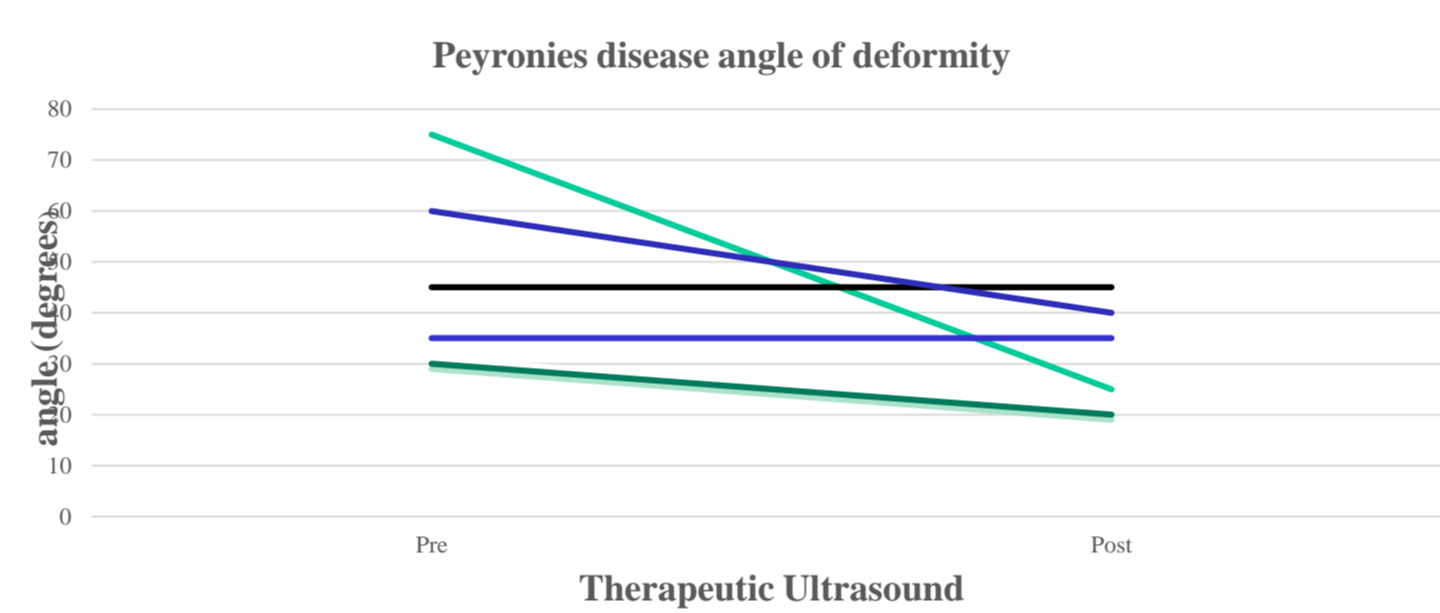
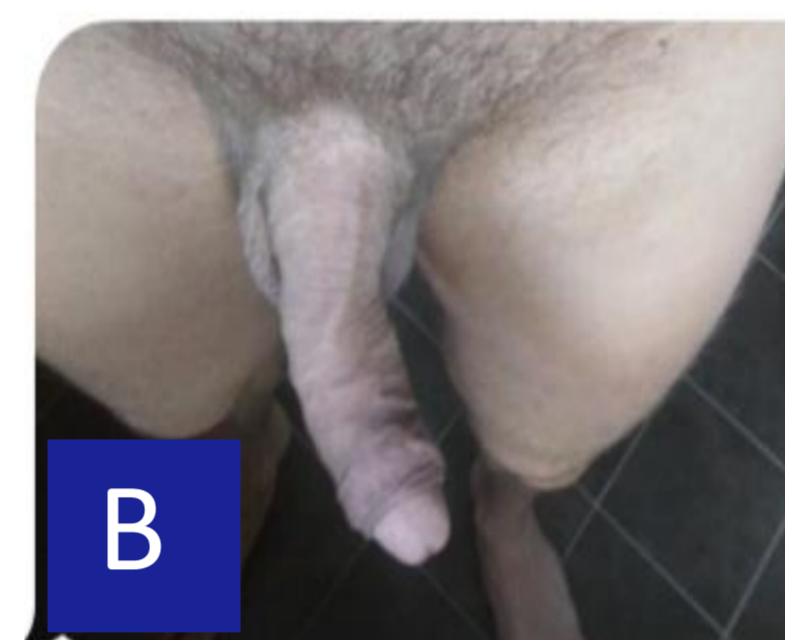
Results:

In 6 of 8 RP participants, partial or complete resolution of PD was observed on PDDU with the remainder stable due to presence of calcified plaques. PDQ and angle of deformity improved in most participants. One participant with post- EBRT PD demonstrated reduction of fibrosis on PDDU, improved IIEF-5 and PDQ score, the other showed mixed results, due to ongoing EBRT effect of EBRT.

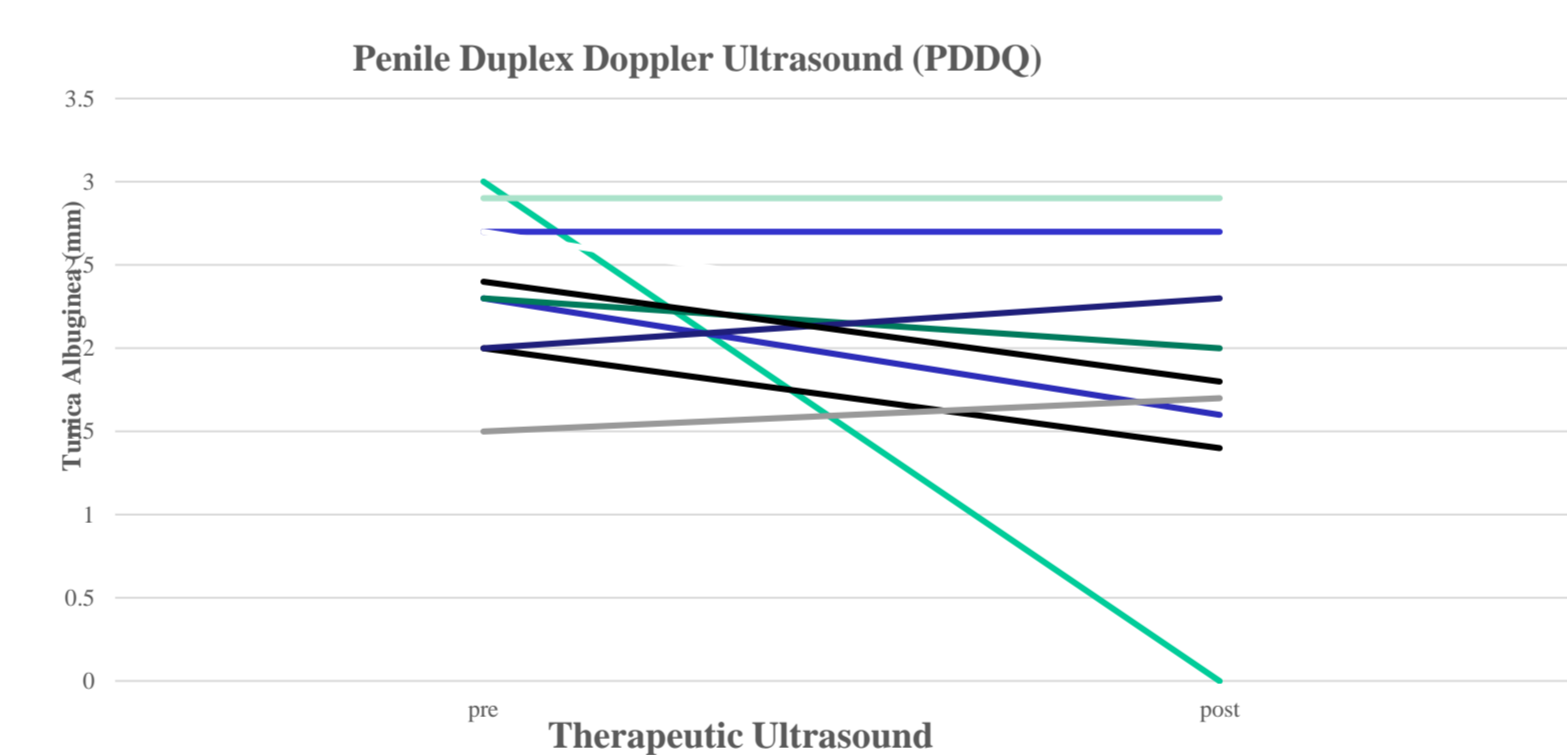
A) Pre TUS X12



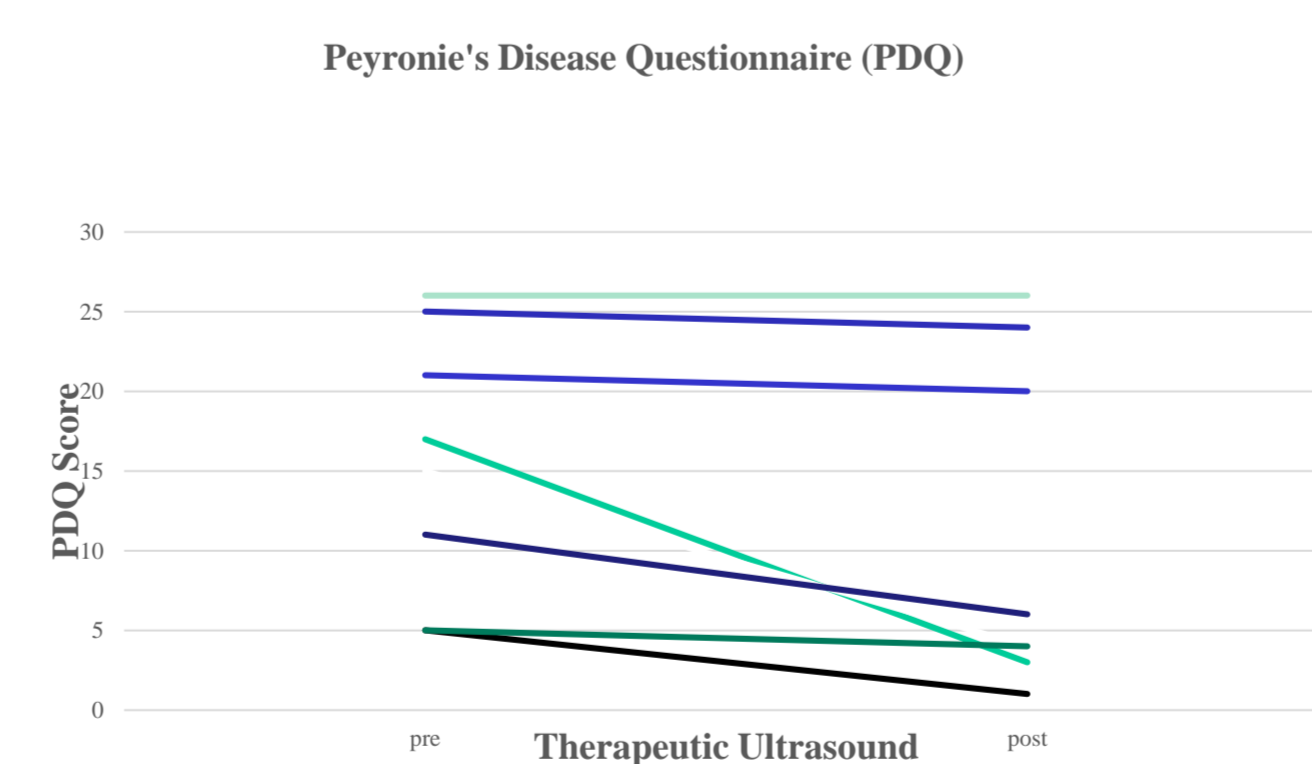
B) Post TUS x12



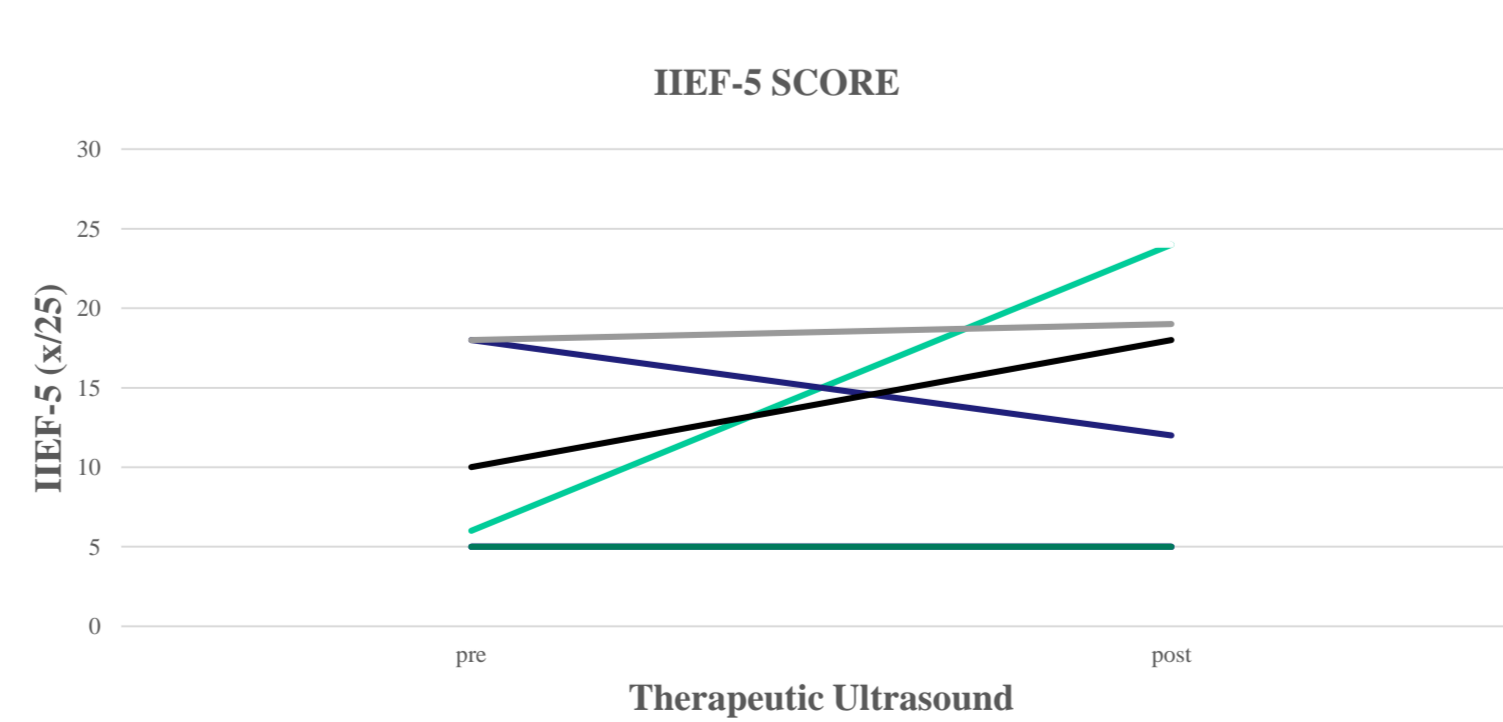
- 1 Angle of deformity improved in 5 of 7
 No improvement in 2 of 7 due to calcification
 1 had pain only, 2 others penile indentations



- 2 Reduction in tunica albuginea fibrosis (mm) occurred in 6 of 9 on PDDQ scan = biological change, confirmed pre vs post PDDU scans.

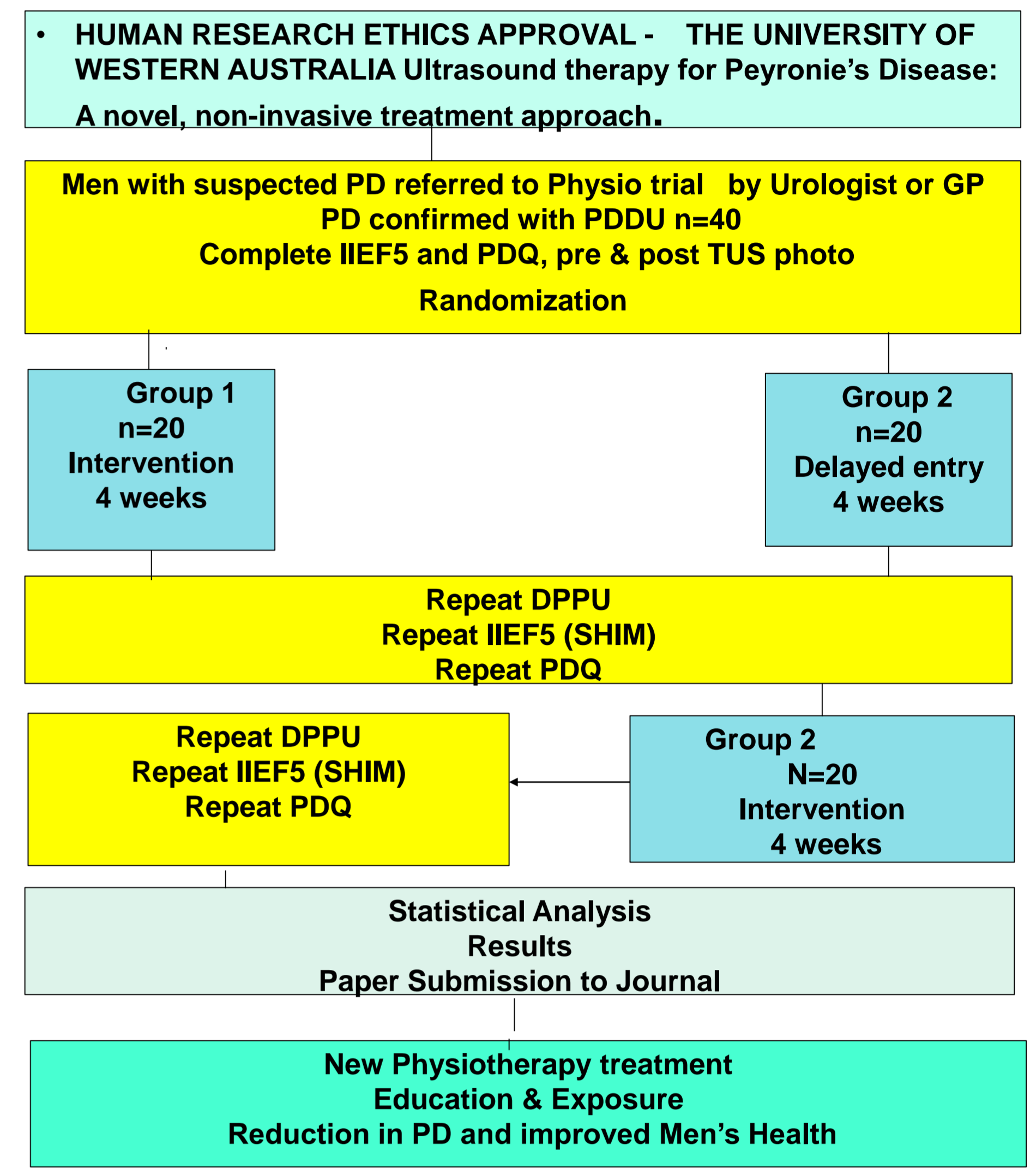


- 3 Pain and distress due to Peyronie's disease measured by PDQ scores reduced in 7 of 8



- 4 Perception of erectile function improved in 3 of 8 and remained stable in 4 of 8, with 1 EBRT worsening, possibly due to ongoing EBRT effects

Results: RCT now under way



Conclusions:

Peyronie's disease is an acquired connective tissue disorder¹ causing physical and psychological burden in 50% of men affected. (3) In this series of cases, TUS offered an apparently effective first line, non-invasive approach to treatment for PD as confirmed on PDDU and subjective reporting. Future randomized controlled trials should formally assess the efficacy of TUS for Peyronie's disease and this is now under way.

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PROST!