



### SHORT- AND LONG-TERM OUTCOME OF HIGH-POWER LASER THERAPY AS A TREATMENT FOR TENDINOPATHY IN 150 SPORT HORSES

#### Introduction

Tendinitis is a common pathology in (sport)horses with a relatively poor prognosis for the horse to return to previous performance level<sup>1,2</sup>. Several in-vitro and in-vivo studies show positive effects of laser light on collagen fiber alignment, fibroblast proliferation and improvement of tensile strength in injured tendons of rats and rabbits<sup>3</sup>. Laser therapy is currently applied to treat human sports injuries<sup>4</sup>, no data are available in horses.

#### Material and method

In this scouting study, the study population includes 150 sport horses that were diagnosed at the Equine Hospital, Tierklinik Lüsche with any of these 4 pathologies: tendinitis of the SDFT (n=30), tendinitis of the DDFT (n=12), (proximal) suspensory ligament desmitis (n=67) and suspensory branch desmitis (n=41). All horses were treated for 2 weeks with a FP4® high-power laser, either as a sole treatment (n=100) or combined with other treatment modalities (n=50). Lameness degree (0-5, adapted AAEP scale) and ultrasonographic appearance (using a quantitative scale described by Ramzan et al<sup>1</sup>) of the injury was recorded before, immediately after and 4 weeks after laser therapy. Long-term follow-up was realized by means of a telephone questionnaire on 6, 12 and 24 months after termination of laser therapy.

First a quantitative statistical analysis was performed for each of the 4 different pathologies. Difference of the mean in lameness degree and ultrasound score at the three different occasions as well as duration until return to controlled exercise and until return to previous performance level were analyzed using a Wilcoxon rank test.

Subsequently a second analysis was performed to identify correlations between factors like re-injury, stage of injury, combined treatment, multiple cause lameness and outcome for the entire group of horses.

#### Results

There is a significant improvement in lameness degree and ultrasonographic appearance of the injury directly, and 4 weeks after laser therapy in all 4 pathology groups (Wilcoxon rank test  $P < 0,001$ ). In 30 horses with tendinitis of the SDFT the mean lameness grade decreased from 0,97 before treatment to 0,45 directly after treatment and to 0,05 4 weeks after treatment. Mean ultrasonographic score decreased from 2,00 to 1,70 and to 1,37, respectively. Average time until return to controlled exercise was 5,9 weeks and return to previous performance level was 5,4 months. In 12 horses with DDFT tendinitis mean lameness decreased from 1,33 to 0,45 to 0,12, while the ultrasound score decreased from 2,23 to 1,30 to 1,14. Average time until return to controlled exercise was 6,5 weeks and return to previous performance level was 4,4 months. Also horses with desmitis of the suspensory branches (41)- or suspensory ligament (67) show a marked improvement: lameness degree decrease respectively from 1,50 to 0,75 to 0,40 and from 1,89 to 1,13 to 0,40 while the ultrasound score decreased from respectively 2,10 to 1,56 to 1,15 and from 2,44 to 1,89 to 1,77. Average duration until return to controlled exercise is respectively 6,4 and 6,1 weeks and return to previous performance level is 4,8 and 4,1 months.

Data for 6 month follow-up were available for 84 horses (all pathology groups combined). Re-injury rate after 6 months was 17%. Acute lesions had a larger, though not significant, improvement of the mean lameness- and ultrasound scores on all occasions, and had a statistically significant greater change to be back at previous performance level after 6 months when compared to chronic lesions ( $P < 0,05$ ). In the group of horses which were treated with laser only there was a slightly larger reduction in mean lameness- and ultrasound scores on all occasions, a faster return to previous performance level (not significant) and a significantly faster return to controlled exercise (5,7 weeks) compared to horses which received additional therapy (7,2 weeks,  $P = 0,03$ ).

#### Conclusion

High-power laser therapy seems promising for tendon- and ligament injuries in horses. There is need for a standardized study in which the effect of high-power laser therapy on experimentally induced tendon lesions is being further investigated.

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## CLINICAL RESEARCH & BEVA HIPPOZORG AWARD

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