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Isometric endurance enhancement after repeated profound continuous pressure treatments

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INTRODUCTION
Massage therapy techniques rely heavily on mechanical pressure which can create fatigue and long term injuries to healthcare providers over time. Therapy techniques also rely on the healthcare provider’s subjective judgment (applying pressure) which will result in a great variance in treatment. MyoDK® is a device that was designed and built on two basic principles: I) to reduce fatigue and injuries to healthcare providers and II) to allow for a reproducible technique with minimal variation. MyoDK allows therapists to apply pressure using their own bodyweight which works to decrease fatigue and injuries, while quantifying the applied pressure using a gauge. This feature helps standardize the amount of pressure applied and allows for accurate reproduction of the protocol. The profound continuous pressure (PCP) therapy was applied using MyoDK and was first tested on normal subjects as we aimed to prove its ability to enhance muscular performance in this patient population before testing on subjects with low back pain.

HYPOTHESIS
Repeated treatment of profound continuous pressure (PCP Therapy) mechanically applied on soft tissues can increase isometric endurance.

METHODS
20 national level French hockey players (age 23.7 ± 4, BMI 25.6 ± 3.1) were randomly assigned to two groups; a control group (n=10) and a treatment group (n=10). The treatment group underwent PCP therapy on trunk and leg muscles for 20 minutes, three times a month for a period of three months. Isometric endurance was calculated based on average performance (in seconds) on 4 endurance tests: trunk flexion (Shirado-Ito test), trunk extension (Sorensen-Biering), hip extension and knee extension (chair). Performance was initially evaluated at (V1) and then at the end of each month (V2,V3,V4) for isometric endurance and push-ups. Statistical analysis used ANOVA with 1 factor (level of significance of 0.05 for all tests).

RESULTS
The global performance on the four visits for mean isometric endurance was significantly higher in the PCP group (113.4 ± 4.6 versus 93.4 ± 5.1, p<0.05) Push-up performance was not significantly modified.

DISCUSSION
The mean isometric endurance became significantly higher on the third (125 ± 18.2 versus 84.8 ± 25.4, p<0.05) and fourth visit (136.9 ± 19.8 versus 96.8 ± 21.8, p<0.05) in the group that underwent PCP Therapy. Most importantly global performance is significantly higher in the PCP group when initial evaluation V1 showed no difference. Interestingly, the arms of the patients were not treated and the performance did not differ between the 2 groups after treatment. This study could not be blinded as sham PCP is impossible to realise. However given the fact that the athletes are competitors by nature we believe there is minimal bias affect in our findings. Whether improvements seen in this study depend on soft tissue modifications or neural improvement remains to be determined in future studies.