EMS RESEARCH

The effects of EMS training in comparison to other strength training methods

Based on research done by J. Mester, S. Nowak, J. Schmithuesen, H. Kleinoeder and U. Speicher (2008/2009)

The introduction of technology-enhanced training methods, such as electro muscle stimulation (EMS) as a new and more time efficient option for general and whole body strength training, has generated a great deal of research to validate the effects of such training on the human body. The research results across different age, training and population groups has shown positive results and the general assumption by sport and medical scientists is that EMS training is an effective and suitable alternative to conventional strength training. A question that often comes up with regard to the impact and effect of whole body EMS training is: how does this technology-enhanced training work in comparison to other strength training methods? In order to move towards an answer, a team of researchers from the German Sport University Cologne divided a group of students into different training groups under highly controlled training conditions for performance outcome tests.

Training	No. of group participants
Muscle Growth	10
Maximum Strength	11
EMS	9
EMS + Muscle Growth	10
Speed Strength	10
Strength Endurance	11
Vibration	9
Vibration + Muscle Growth	10

Research description and outcome

The research by Mester and colleagues aimed to compare different types of strength training by testing and analysing classical and modern strength parameters. A total of 80 research participants (all sport science students) were divided into 8 different training groups and trained twice a week over a period of 4 weeks. All participants were tested 3 times – (1) a pre-test before the first training, (2) a post-test directly after the study period and (3) a re-test 2 weeks after the end of the study period.

Test results showed that EMS training increased maximum strength of the tested muscle groups (on average by +9%) and significantly improved the maximum power output (on average by +29%) of participants (as shown in table). This is highly relevant for sport performance, as well as the everyday requirements of our muscular system. Most notably, it was found that EMS training was the only training method that succeeded in improving the speed factor within overall performance. Another interesting finding was the EMS training group was the only group to show improvements after the conclusion of the 4-week training intervention, which indicated EMS training requires a longer recovery period as the training effects have a delayed onset.

Conclusion

A range of different strength parameters were tested in this EMS research project and some of the most interesting and significant results were found for maximum strength and maximum power outputs. Compared to the other training methods that were tested in this research, the EMS training accounted for similar and even better test results than traditional strength training methods. The authors also found EMS training to be more intense than classical strength training and thus requires longer recovery periods.