

Innsbruck, 17th May 2017

Ao. Univ. Prof.
Dr. Christian Raschner
Institut für Sportwissenschaft
Universität Innsbruck

To:
Mag. Dr. Markus Mitterhumer
intelligent motion GmbH
Hauptstraße 13
4552 Wartberg an der Krems | Austria

Subject: Statement on the unique stance of the LIFTER in the field of strength training

The rising number of athletes nowadays increases the quality of fitness training for elite athletes, as well as for younger sportspeople. As the training frequency was already mainly pushed to the limits, the intensity of the training became the focus of trainers and athletes over the last few years. Furthermore, it is highly important to help athletes to be able to handle a great deal of stress during competitions and training sessions and to keep the risks of injury and burn-out low.

Sports science is applied to look for new possibilities to implement innovative training devices, which help athletes to relief stress on the musculoskeletal system while training. These aspects will have to be considered in the field of competitive popular sports in the future.

LIFTER is a device developed for strength training, which ensures the safety of athletes and helps to improve the optimum intensity while power training. The interest for the eccentric

exercise power-training and its efficiency in the training literature has increased over the last years. Free weight training is essential in competitive sports. The problem so far tended to be the performance of high intense exercises and supramaximal reruns on a safe level.

The LIFTER allows to train eccentric free-weight-training for the lower / upper limbs and torso muscles in a safe and effective way. Similar devices, to train eccentric free-weight-training, are not on the market so far. Only devices with cable-operated-systems for eccentric power-training exercises combined with concentric movement are used if available. Compared to a free-weight-training, the degree of freedom and the sensorimotor requirements are lower.

Besides eccentric maximum-power-training also high-speed-strength training is very important. High-speed strength is an important performance factor in many sports. Common exercises with a free dumbbell to improve high-speed-power are clean lifts, snatch lifts or jumps. Until now, landing with a dumbbell after a jump lead to unnecessary stress of the passive musculoskeletal system, in particular of the spine and of the neck. When jumping the LIFTER follows the dumbbell with its mechatronic controlled arms and catches it at the upper turning point. Athletes are able to perform a controlled landing without additional weight (barbell and weight), so the force of the landing significantly decreases. Furthermore, the hard- and software of the LIFTER makes it possible to set variables for an athlete's personal range of motion when power-training and therefore has lower risks of injury, compared to common methods. The digital panel allows an athlete to perform a feedback-training if needed. This will be an important issue in terms of quality-improvement in the future.

Another aspect of the mechatronic controlled LIFTER is shown in the field of rehabilitation, where a pure concentric training can be performed. In that case the extension arms of the LIFTER lower the dumbbell and the athlete has to move the load perfectly concentric. This leads to a lower load for the muscular- and motor-system because of the missing eccentric

body movements and therefore makes rehabilitation methods more efficient and raises the chance of a faster recovery.

Another advantage not to underestimate is the psychological side while making high-intense-power-training with the LIFTER. Regardless of their age and sex, Top-Athletes usually have a 100% positive feeling of security while training with the LIFTER and can therefore fully concentrate on their performance.

With regards,



Ao. Univ. Prof. Dr. Christian Raschner



Carson Patterson MA