Muscle Force also significantly inferior in the immobilization group. These results contrast immobilization negatively affected the healing process. The formation of scar tissue occurs during the healing process, and this scar tissue can affect muscle function and performance. The five day period of immobilization affected the healing process, and scar tissue formation was observed in the immobilized group. The results show that scar tissue formation is a significant factor in the healing process of muscle injuries. The immobilization group showed a decrease in muscle strength compared to the sutured muscle group. The sutured muscles demonstrated faster muscle regeneration and strength recovery compared to the immobilized muscles.

Material and methods:
44 mice (C57 BL/10) were split in 3 groups (control: n=6; laceration-immobilization: n=19; laceration-suture: n=19). Both gastrocnemius muscles of 32 mice were lacerated at 60% of their length from their distal insertion, 25% of their width and 50% of their thickness. In 16 of the experimental animals, the lacerated muscles of the right leg were immediately sutured (Kessler modified sutures) after the injury. In 6 other animals, a long-leg cast in equine was applied onto the right lacerated leg for 5 days. In 6 animals, the right leg was sutured and the left leg was immobilized. Healing was monitored (at 2, 7, 14, 21, 28 days) in both sutured and immobilized muscles using regular histology (Hematoxylin and Eosin) and immunohistochemistry (desmin and vimentin). At 1 month post-injury, muscle healing was assessed in the 2 groups by muscle contractility testing (n=6 per group) and compared to a non-injured muscle, which served as control (n=6). Specifically, fast twitch strength (FT1) and tetanic strength (TS) were measured by electrical field stimulation.

Results:
Bothimmobilized and sutured muscles showed the ability to heal due to a massive muscle regeneration, however, at 28 days, a dense and extensive scar tissue filled the lacerated site in the muscles, which have been immobilized. At 2 days post-injury, many regenerating myofibers were already observed using desmin staining. At 28 days, scar tissue was located at the superficial part of the lacerated site. No scar tissue was observed at the deepest part of the muscle (B). One month after injury, the FT1 strength was 67 + 5.4 mN/g in the immobilization group and 133 + 10.6 mN/g in the suture group (ANOVA, p=0.0001) (Figure 3). The TS strength was 381%, the lacerated muscles 35%, and the immobilized muscles 18% of the TS measured in the intact muscles at one month after the injury (Figure 4). The differences between the four groups were significant.

Discussion
This study has demonstrated the advantage of suturing a muscle laceration on muscle healing following severe laceration. The advantage of suturing a muscle laceration is immense, and it can significantly improve the healing process. The results indicate that suturing a muscle laceration can improve muscle regeneration and strength recovery compared to immobilization. The immobilization group showed a decrease in muscle strength compared to the sutured muscle group. The sutured muscles demonstrated faster muscle regeneration and strength recovery compared to the immobilized muscles. The results show that scar tissue formation is a significant factor in the healing process of muscle injuries. The immobilization group showed a decrease in muscle strength compared to the sutured muscle group. The sutured muscles demonstrated faster muscle regeneration and strength recovery compared to the immobilized muscles.