THE EFFECTS OF MIXED MARTIAL ARTS GLOVES ON GRIP STRENGTH IN TRAINED FIGHTERS

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ABSTRACT

Grip strength is a key component during grappling segments of a mixed martial arts (MMA) competition. Controlling an opponent during a clinch, working a takedown, preventing a takedown, and groundwork submissions and defense all require grip strength. Previous research has highlighted the importance of grip strength during grappling. Mixed martial arts gloves are worn during MMA competitions to reduce damage to the striker's hand and wrist when striking, as well as the opponent's head during contact. A common complaint among fighters is that the MMA glove reduces the ability to grip an opponent effectively during grappling. However, the supposed effect of MMA gloves on grip strength has yet to be measured and quantified within the scientific literature. PURPOSE: The purpose of this study was to determine the effects of mixed martial arts gloves on grip strength in trained fighters. METHODS: Fourteen trained fighters volunteered to participate in this study (Males = 12 and Females =2). All fighters must have been training for at least a year (8.9 ± 11.4 years of training). Grip strength was measured using a hand grip strength dynamometer. Subjects practiced with the grip strength dynamometer three times with their non-dominant hand for familiarization with the process. Subjects then completed two counterbalanced trials (one with an MMA glove and one without) using their dominant hand. Grip strength was measured three times during each trial, with one minute of recovery between each attempt. The highest recorded grip strength was used for each condition. Four-ounce MMA gloves were used in this study. Subjects were fitted for proper glove size prior to starting the trial. Means for dependent measures (highest grip strength for both conditions) were compared using a paired sample t-test with an alpha of 0.05. RESULTS: Grip strength was significantly greater in the no glove condition (47.82 ± 6.61 kg) when compared to the MMA glove condition (37.75 ± 6.45 kg) at $p \leq .001$. CONCLUSIONS: Findings from this study indicate that MMA gloves significantly decrease grip strength in relation to the no glove condition. Grip strength decreased by an average of 10.07 kg resulting in a 21% decrease in grip strength. This reduction in strength could be significant enough to result in a decrease in the ability of the fighter to control an opponent's movement during grappling segments of a mixed martial arts competition. This study focused on the effects of the MMA glove only and did not examine the effects of taping, because taping methodology varies greatly among fighters. Theoretically, taping of the hands and wrist could further reduce grip strength. PRACTICAL APPLICATIONS: Findings from this study demonstrate a significant reduction in grip strength when wearing a mixed martial arts glove. Information from this study could be used to improve MMA glove design, reducing the loss of grip strength while still providing adequate protection for both fighters.

INTRODUCTION

•Grip strength is a key component during grappling segments of a mixed martial arts (MMA) competition (2,3,4,5,6). Controlling an opponent during a clinch, working a takedown, preventing a takedown, and groundwork submissions and defense all require grip strength. Previous research has highlighted the importance of grip strength during grappling. Mixed martial arts gloves are worn during MMA competitions to reduce damage to the striker's hand and wrist when striking, as well as the opponent's head during contact (1). A common complaint among fighters is that the MMA glove reduces the ability to grip an opponent effectively during grappling. However, the supposed effect of MMA gloves on grip strength has yet to be measured and quantified within the scientific literature.

PURPOSE

- The purpose of this study was to determine the effects of mixed martial arts gloves on grip strength in trained fighters.

METHODS

Subjects

- Fourteen trained fighters (8.9 ± 11.4 years of training) participated in this study (Males = 12 and Females =2)

Lab Protocol

- Four-ounce MMA gloves were used in this study.
- Subjects were fitted for proper glove size prior to starting the trial.
- Grip strength was measured using a hand grip strength dynamometer (3,4).
- A familiarization trial was performed using the non-dominant hand and no glove. Subjects completed three trials with one minute recovery between trials.
- After the familiarization trial subjects completed two counterbalanced trials (one with an MMA glove and one without) using their dominant hand. Grip strength was measured three times during each trial, with one minute of recovery between each attempt.
- The highest recorded grip strength was used for each condition.

Statistical Analysis

- Means for dependent measures (highest grip strength for both conditions) were compared using a paired sample t-test with an alpha of 0.05.

RESULTS

•Grip strength was significantly greater in the no glove condition (47.82 ± 6.61 kg) when compared to the MMA glove condition (37.75 ± 6.45 kg) at $p \leq .001$.

CONCLUSION

Findings from this study indicate that MMA gloves significantly decrease grip strength in relation to the no glove condition. Grip strength decreased by an average of 10.07 kg resulting in a 21% decrease in grip strength. This reduction in strength could be significant enough to result in a decrease in the ability of the fighter to control an opponent's movement during grappling segments of a mixed martial arts competition. This study focused on the effects of the MMA glove only and did not examine the effects of taping, because taping methodology varies greatly among fighters. Theoretically, taping of the hands and wrist could further reduce grip strength.

PRACTICAL APPLICATIONS

Findings from this study demonstrate a significant reduction in grip strength when wearing a mixed martial arts glove. Information from this study could be used to improve MMA glove design, reducing the loss of grip strength while still providing adequate protection for both fighters.

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