4-21-2017

The Effects of 5 Weeks of Pull-up Training with Fat Gripz™ Bar Attachments on Grip Strength and Shot Speed in Collegiate Men’s Lacrosse Athletes

Richard Medina
Sierra Schultz
Mikayla Holder
Erica Nurenberg

Follow this and additional works at: http://digitalcommons.hope.edu/curcp_16

Recommended Citation

http://digitalcommons.hope.edu/curcp_16/167
April 21, 2017. Copyright © 2017 Hope College, Holland, Michigan.
The Effects of 5 Weeks of Pull-Up Training with Fat Gripz™ Bar Attachments on Grip Strength and Shot Speed in Collegiate Men’s Lacrosse Athletes

Mikayla Holder, Richard Medina, Erica Nurenberg, Sierra Schultz
Faculty Mentor: Maureen Dunn
Kinesiology, Hope College

Abstract

Using wider bar diameters during “pulling” exercises (such as pull-ups), may activate muscles in the forearm influencing grip strength. Fat Gripz™ bar attachments, devices used to increase bar diameter, were used in this study. The purpose was to examine whether performing pull-up training using Fat Gripz™ (FG) vs. no Fat Gripz™ would improve grip strength, 1RM lat pull-down, pull-ups to failure, and shot speed of male collegiate lacrosse players compared to using a standard diameter pull-up bar (CON, n=6). It was hypothesized that dependent variables would have a greater increase in the FG group than the CON group due to enhanced forearm muscle activation. All participants performed 3 sets of supervised pull-ups to failure 3 times/week for 5 weeks. Following training pull-ups to failure increased for both groups (p=0.048, p=0.048 respectively), however, there was no significant difference between the CON and FG groups (p=0.331). Similarly, all participants increased grip strength with training (left grip: pre=41.07±6.59 kg, post=46.04±6.24 kg, p=0.001, right grip: pre=41.03±5.44 kg, post=46.83±1.50 kg, p=0.005). 1RM lat pull-down (pre=367.71±45 lb, post=383.75±65.95 lb, p=0.031) and lacrosse shot speed (pre=74.28±8.59 mph, post=78.61±18 mph, p=0.006) with no significant difference between groups (p=0.05 for all dependent variables). Interestingly, the FG group averaged significantly less pull-ups per set than the CON group over the course of the 5 week training period (CON: 10.23±1.29 reps/set, FG: 6.15±1.13 reps/set, p=0.024). Therefore, while our hypothesis that the FG group would improve to a greater degree with training than the control group was not supported, there is evidence to suggest that training with a wider bar diameter can result in similar performance improvements with less training volume. Further research is warranted to study the effects of resistance training with wide diameter bars.

Introduction

- Mixed results with thick bar training
  - Fissoretti et al. (2008)
  - EMG activity in forearm muscles when using thin bars as opposed to thick bars, thin bars elicited greater electrical activity and thus provided a greater stimulus for the development of grip strength

- Rautman et al. (2007)
  - As bar diameter increased 1RM for pull-down exercises decreased, showing a greater stimulus for the development of grip strength when using thick bars

- Little to no research on the sport of lacrosse
  - Marsh et al. (2010)
  - Examined grip strength and lacrosse shot accuracy, but found no significance between the two variables

Hypothesis

- Fat Gripz™ Group will show improvements in grip strength (kg), shot speed (mph), and pull-ups to failure
- Thin bar diameter increased 1RM for pull-down exercises, showing a greater stimulus for the development of grip strength when using thick bars

Methods

Subjects

- 14 subjects (ages 18-21) recruited from the Hope College Men’s Lacrosse Team
- Pre testing: shot speed (mph), grip strength (kg), 1RM Lat Pulldown (lbs), pull-ups to failure
- 2 evenly matched groups
  - Fat Gripz™ (FG) (n=8)
  - Control (CON) (n=6)

Fat Gripz™

- Fat Gripz™ group training
- Participants continued with the pull-up protocol.

Experimental Design – 7 weeks total

- Week 1 (3 Days): Pre-Testing
  - Matched and randomly assigned to training groups Fat Gripz™ (n=8) and Control (n=6)
  - Week 2: 3 Days a week
    - 3 sets of pull-ups to failure using a pronated grip with 3 minutes rest between sets and participants wearing loose athletic clothing
    - Week 7: Post-Testing

- Week 6: Training
- Week 7: Post-Testing

Figure 1. Pre and Post-Testing Schedule

Week 1: Pre-Testing
Week 2: Training
Week 3: Post-Testing

Figure 2. Study Design

Figure 3. After 5 weeks of pull-up training, mean left hand grip strength significantly increased in both groups from pre-test to post-test (p<0.001), yet there was no difference between groups (p=0.676).

Figure 4. After 5 weeks of pull-up training, mean lacrosse shot speed significantly increased in both groups from pre-test to post-test (p<0.001), yet there was no difference between groups (p=0.683).

Figure 5. After 5 weeks of pull-up training, mean pull-ups to failure significantly increased in both groups from pre-test to post-test (p<0.001), yet there was no difference between groups (p=0.676).

Results

- 14 subjects (ages 18-21) recruited from the Hope College Men’s Lacrosse Team
- Pre testing: shot speed (mph), grip strength (kg), 1RM Lat Pulldown (lbs), pull-ups to failure
- Fat Gripz™ and control group training
- Participants continued with the pull-up protocol.

Figure 6. During 5 weeks of pull-up training, the control group performed significantly more pull-ups to failure than the Fat Gripz™ group (p=0.003). The control group also performed significantly more pull-ups to failure than the Fat Gripz™ group (p=0.006). These findings suggest a greater stimulus for pulling up exercise with a greater wide diameter bar. Interestingly, both groups averaged together, showing that more pull-ups were performed in success, compared to accuracy, compared to set three (p=0.005).

Figure 7. After 5 weeks of pull-up training, mean right hand grip strength significantly increased in both groups from pre-test to post-test (p<0.001), yet there was no difference between groups (p=0.683).

Conclusions

- Training effect from five week pull-up regimen
  - Shot speed
  - Grip Strength
  - 1RM lat pull down
  - Number of pull ups
  - No significant difference between training groups

- Significantly more pull-ups in set one compared to set two and set three

- Both groups improved similarly despite the Fat Gripz™ group completing significantly less pull-ups over 5 weeks compared to the control group

- Fat Gripz™ were not the “Ultimate Arm Builder”

Limitations

- Number of Participants
- Level of effort from participants
- Fat Gripz™ slipping off
- Lack of exercise log and control of diet
- Inter-tester Reliability

Implications

- Further research needs to be conducted in order to examine the full effect of Fat Gripz™
- Results may have been more significant if the participants continued with the pull-up protocol
- The usage of Fat Gripz™ may allow for male lacrosse athletes to achieve similar strength gains with less training

Grip strength, shot speed, 1RM lat pull down, and number of pull-ups to failure.