

EMG

Investigation of EMG Fluctuation of Antagonist Muscle During Agonist Muscle Activation After Isotonic Strength Training

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Abstract : The purpose of this study was to investigate EMG fluctuation of antagonist muscle during agonist muscle activation after isotonic strength training. Thirty sedentary males (age 21 ± 1.83 years, Height = 173.90 ± 3.94 cm, weight = 73.15 ± 7.51 kg) without and history of injuries of shoulder and elbow joints, tendons and muscles involved in elbow flexion movement participated in this study. The subjects were randomly assigned to strength weight training (n=15) and control (n = 15) groups. Then the electromyography (EMG) data (Integrate EMG) from the agonist (Biceps brachii) and antagonist (Triceps brachii) muscles, arm circumference and maximal voluntary contraction (MVC) of the dominant arm were measured in the pre - test. The experimental group performed isotonic strength training of the elbow flexors for 8 weeks 3 times per week. During this period, the control group did not perform any specific types of exercise. At the end of this training period, all parameters were measured again (post - test).

Key words

EMG, Coactivation, Hypertrophy.

1 - Email : hemati@Guilan.ac.ir

EMG

$\pm /$
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(n=)

(n =)

(MVC)

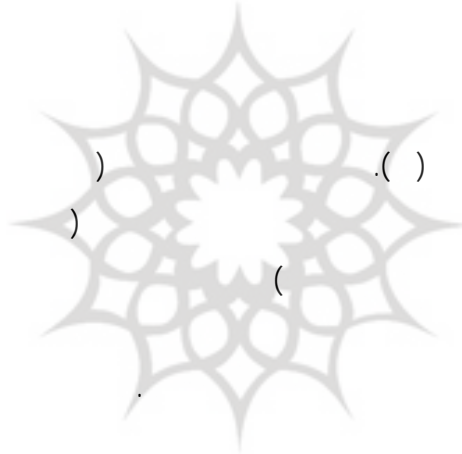
$P \leq /$
MVC

EMG

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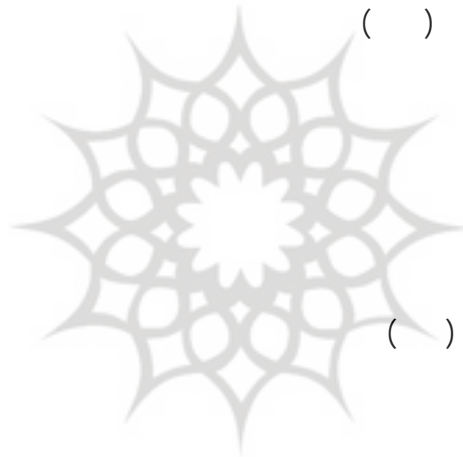
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- 1 - Intramuscular neural adaptations
 - 2 - Motor unit recruitment
 - 3 - Firing rate
 - 4 - Synchronization for firing
 - 5 - Stretch reflex input
 - 6 - Intermuscular neural adaptations
 - 7 - Activation of Synergists
 - 8 - Co Contraction of antagonist
 - 9 - Agonist
 - 10 - Antagonist
 - 11 - Co-Contraction
 - 12 - Co-Activation
 - 13 - Wear et al

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EMG

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- 1 - Nielsson and Kagamihara
 - 2 - Ebersole et al
 - 3 - Aagaard et al

(MVC)

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MVC

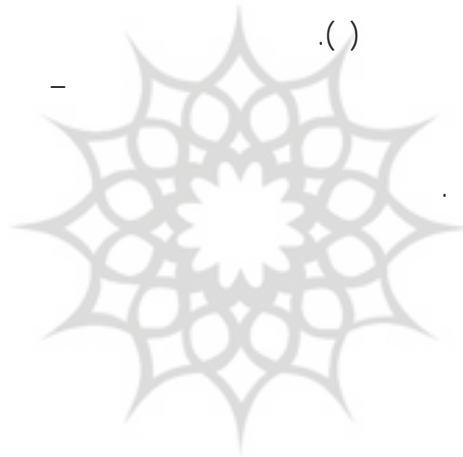
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- 1 - Carolan & Cafarelli
 - 2 - Hakkinen et al
 - 3 - Neural drive

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1RM

1RM

1RM

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1 - Biceps Preacher Curls (Olympic Bar)

$$1RM = \text{BarWt}_{\text{kg}} \div 1 - (0.02 \text{ Re ps})$$

1RM

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Jackson

Load Cell

(MVC)

Lafayette

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Load cell

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Biometrics

SG110

P3X8

DataLOG

PC

Datalog Ver.2.0a

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- 1 - Compensatory acceleration
 - 2 - Wooden plate

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MVC

(EMG)

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EMG

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AgCl

Medicotest blue sensor

Megawin Ver.2

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MVC

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MVC

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Gain

Megawin

Analog differential

Electronic

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(A/D)

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Megawin Ver.2

IEMG

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Mega Electronic

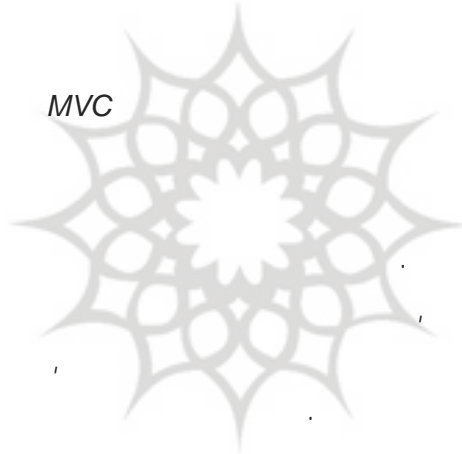
Marker

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MVC

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SPSS

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IEMG

IEMG

MVC
(Antagonist)

IEMG,

MVC

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IEMG

/ ± /	/ ± /	/ ± /	/ ± /	(Kg)MVC
/ ± /	/ ± /	/ ± /	/ ± /	(μV/s) IEMG
/ ± /	/ ± /	/ ± /	/ ± /	(μV/S) IEMG
/ ± /	/ ± /	/ ± /	/ ± /	(cm) ()

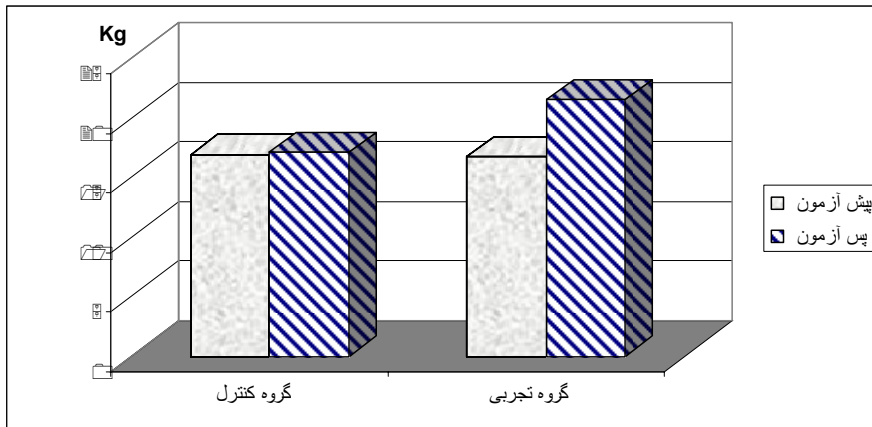
t

MVC

/ MVC .(P ≤ / t = /)

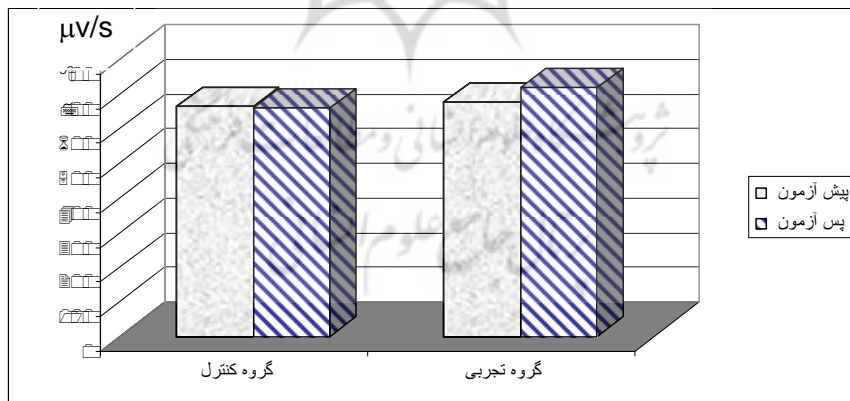
MVC

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MVC

$IEMG$ / $IEMG$ / $IEMG$
 $(P \leq / t = /)$
 $IEMG$



IEMG

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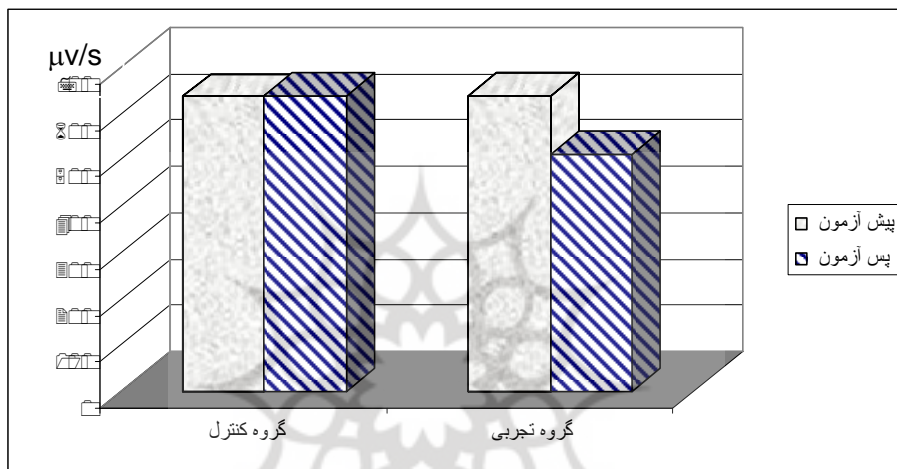
IEMG

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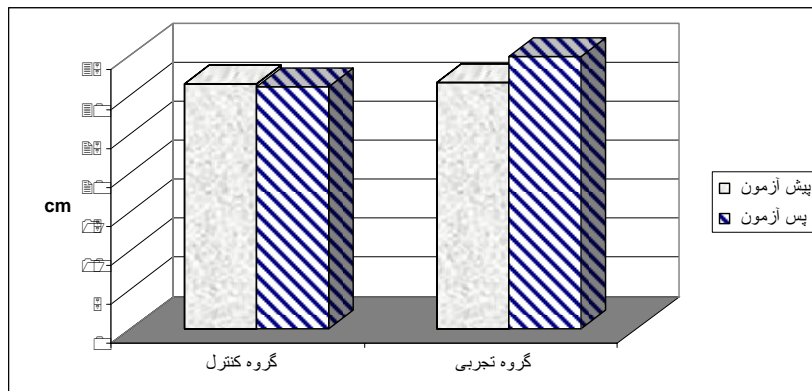
IEMG

($P \leq$ / $t =$ /)



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EMG MAX

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EMG MAX

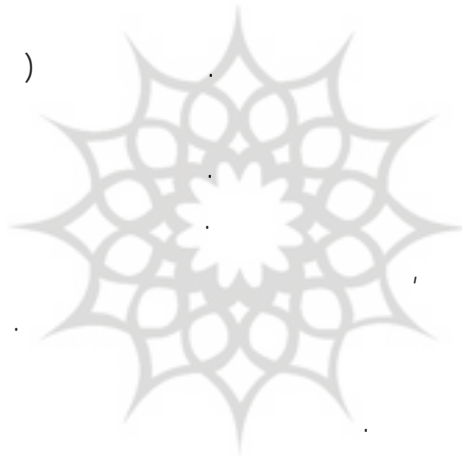
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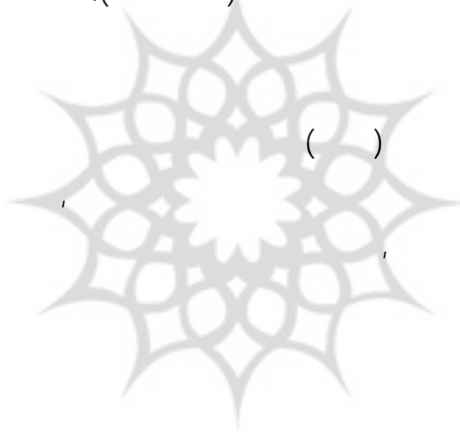
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