

Effect of Submaximal Eccentric versus Maximal Isometric Contraction on Delayed Onset Muscle Soreness

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Abstract : Background: Delayed onset muscle soreness (DOMS) is the most common symptom when ordinary individuals and athletes are exposed to unaccustomed physical activity, especially eccentric contraction which impairs athletic performance, ordinary people work ability and physical functioning. A multitude of methods have been investigated to reduce DOMS. One of the valuable method to control DOMS is repeated bout effect (RBE) as a prophylactic method. Purpose: To compare the repeated bout effect of submaximal eccentric contraction versus maximal isometric contraction on induced DOMS. Methods: Sixty normal male volunteers were assigned randomly into three groups of equal number: Group (A) "first study group": 20 subjects received submaximal eccentric contraction on non-dominant elbow flexors as prophylactic exercise. Group (B) "second study group": 20 subjects received maximal isometric contraction on non-dominant elbow flexors as prophylactic exercise. Group (C) "control group": 20 subjects did not receive any prophylactic exercise. Maximal isometric contraction peak torque of elbow flexors and patient related elbow evaluation (PREE) scale were measured for each subject 3 times before, immediately after and 48 hours after induction of DOMS. Results: Post-hoc test for maximal isometric peak torque and PREE scale immediately and 48 hours after induction of DOMS revealed that group (A) and group (B) resulted in significant decrease in maximal isometric strength loss and elbow pain and disability rather than control group (C), but submaximal eccentric group (A) was more effective than maximal isometric group (B) as it showed more rapid recovery of functional strength and less degrees of elbow pain and disability. Conclusion: Both submaximal eccentric contraction and maximal isometric contraction were effective in prevention of DOMS but submaximal eccentric contraction had the greatest protective effect.

Keywords : delayed onset muscle soreness, maximal isometric peak torque, patient related elbow evaluation scale, repeated bout effect

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