第142回スポーツサイエンス研究会

日時　2014年11月25日（火）　17:00より

場所　早稲田大学　所沢キャンパス　100号館5F　第一会議室

演題　Eccentric exercise: Positive and Negative Aspects

Professor Kazunori Nosaka
（Edith Cowan University, Australia）

In exercises such as downhill walking, going down stairs, downhill running, Nordic hamstrings exercise and back squat exercise with a heavy weight, leg muscles are stretched or lengthened during submaximal or maximal contractions, which is referred to as eccentric contractions. It has been well documented that unaccustomed exercise consisting of eccentric contractions induces muscle damage characterised by delayed onset muscle soreness and a prolonged decrease in muscle strength. Damage and inflammation of muscle fibres and connective tissue surrounding muscle fibres appear to be associated with these symptoms. When the same eccentric exercise is repeated, less muscle soreness and faster recovery of muscle strength are evident. This adaptation is referred to as the repeated bout effect. It has been shown that submaximal eccentric contractions or maximal isometric contractions at a long muscle length confer protective effect again muscle damage induced by maximal eccentric contractions that are performed within 2 weeks. This type of protective effect is considered as pre-conditioning effect. If eccentric exercise is performed regularly and repeatedly for several weeks, training effects such as increases in muscle strength and size are produced, and these effects of eccentric training have been shown to be greater that those after concentric training in which muscles are shortened. Additionally, eccentric training seems to be more effective than concentric training for improving insulin sensitivity, blood lipid profiles, blood pressure and life-related fitness in elderly individuals. It does not appear that muscle damage is responsible for these adaptations, but eccentric contractions themselves seem to provide potent stimulus for these. The presentation will cover these aspects of eccentric exercise, and discuss positive and negative aspects of eccentric exercise and eccentric exercise training.

早稲田大学 スポーツ科学学術院
Faculty of Sport Sciences, Waseda University

世話人：正木宏明・紙上敬太
早稲田大学　スポーツ科学学術院
E-mail: k-kamijo@aoni.waseda.jp