

原著論文

## 短距離走選手のための機能的なトレーニングエクササイズ

### Functional leg strength exercises for sprint runners

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#### Abstract

The purpose of this study was to examine the muscle-tendon complex (MTC) behavior and the muscle activation during the hip extension-flexion exercises in order to compare those during sprint running movements. The 10 male sprinters performed six functional strength exercises which related to running movements: The hip extension and flexion exercises were performed without and with the manual loads, respectively. The hip and knee joint angles and angular velocities were measured by 2D kinematics as well as surface electromyogram (EMG) and length changes of MTC of four muscles (gluteus maximus, biceps femoris, iliopsoas, and rectus femoris) were measured during exercises. In hip-flexion exercises, the iliopsoas MTC shortened with high muscle activities. With higher load exercises, the EMG and length changes profiles in the shortening phase of the iliopsoas were similar to those of during sprint running. The activities and length changes of gluteus and biceps femoris in the hip-extension exercises became similar with those profiles during the contact phase of running. These results suggest that the manual load exercise related with the running movement phases can provide the stimulus for training load of sprinters functionally.

キーワード トレーニング, 股関節, 筋電図, ランニング

Training, Hip joint, Electromyogram, Running

#### I. 緒言

競技スポーツのパフォーマンス向上のために、ストレングストレーニングの重要性は選手やコーチに広く理解され、いくつものトレーニングが日常的に実施されている。特に、骨格筋に対するストレングストレーニングは、

ウェイトやチューブ、空気圧、徒手での抵抗負荷が用いられるが、それらのトレーニングによって、筋の肥大による筋力の向上、筋のエネルギー供給能力の増進、筋活動を調整する能力の改善、筋機能の向上が図られる（金久, 2006, pp.271-273 ; Kraemer, 2008, pp.142-

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