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The risk factor of low back pain by running.

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Running is basic exercise on sports activity. However, there are many runners with low back pain compared to any other sports. So, the purpose of this study is to clarify the risk factor of low back pain from trunk muscle activity and lumbo-pelvic motion.

Study 1: Analysis of trunk muscle activity and lumbo-pelvic motion during running.

Method: The activity of 8 muscle types are measured, including rectus abdominal, external oblique, internal oblique / transversus abdominal, erector spine, rectus femoris, biceps femoris, adductor, and iliopsoas muscle. These muscles activity is measured by wireless surface electromyography (EMG) telemeter (Harada electric Co.). At the same time, motion capture system (Qualysis Co.) is used to

analyze lumbo-pelvic motion. The data is calculated as lumbar angle and pelvis tilting angle. Moreover, subjects are directed to run until distress, and we compare the muscle activity and the lumbo-pelvic motion between non-fatigue state and fatigue state.

Study 2: Effects of intervention of trunk stabilization exercise during running.

Method: We compare the trunk muscle EMG and lumbo-pelvic motion during running between before and after intervention of trunk muscle stabilization exercises. The method is same to Study 1. Intervention exercises are prone bridge, hand-knee, elbow-toe, back bridge. These exercises are adapted subjects level, and make graduate transition.