

## Department of Sports and Health Sciences

## Key words

Human Performance Measurement, Sports Performance,



Doctor of Philosophy(Ph.D) / Professor

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## Education

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## Professional Background

Morishita Orthopedic Clinic (Locomotive Rehabilitation Staff) /Lector, Associate Professor of  
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## Consultations, Lectures, and Collaborative Research Themes

Consultation / lecture / Collaborative research on utilization of measurement data to enhance competitiveness, Consultation / lecture on conditioning of athletes, Lecture on the theme of health and physical fitness

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## Main research themes and their characteristics

## [A simple method for measuring the muscle cross-sectional area of the oblique muscle group]

Until now, there has been no method for non-invasively and conveniently measuring the cross-sectional area of the abdominal muscle group, and a method for quantitatively evaluating the effect of training has not been widely used.

In this study, we developed software to estimate the muscle cross-sectional area from images of oblique abdominals measured by an ultrasound imaging device. The reliability of estimated cross-sectional areas of muscles calculated using this software was high. This system enables non-invasive and simple measurement of muscle cross-sectional area without using CT or MRI. Also, improved the ergometer and developed a muscle power measurement device. With this device, it was possible to measure the muscle power exertion value during body torsion and its reliability was also high.

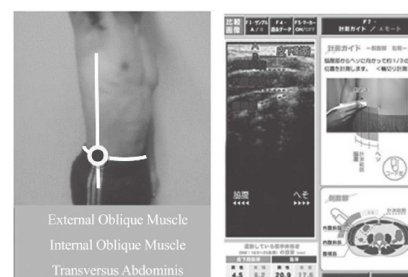


Fig.1 oblique muscle group measured by ultrasound imaging device

## [Does changing the posture affect the kayak player's rowing power performance?]

In the case of competitions with a small population such as canoeing, there is insufficient study to improve competitiveness. For that reason, there are cases where instructions based on scientific grounds are not provided. So, the purpose of this study was to investigate the effect of different postures on the rowing power performance of kayak players. The subjects of this study were 14 male college kayak athletes (age :  $19.6 \pm 1.0$  year, height :  $174.7 \pm 4.9$  cm, weight :  $68.6 \pm 5.6$  kg). For all subjects, measurement of rowing power was carried out on three postural conditions (A: stoop, B: forward lean, C: straight posture). According to the one-way repeated measures analysis of variance (ANOVA; posture), a statistically significant difference was observed on posture factor, and rowing power of A type was less than B and C type. There was no significant difference in the maximum power arrival time between all posture conditions. It has been proved that the stoop posture is not suitable for the kayak's starting action.

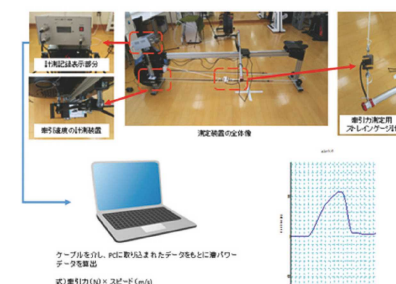


Fig.2 Measurement device of rowing power performance of kayak players.

## Major academic publications

Takanori Noguchi, Shinichi Demura, Kenji Takahashi, Gou Demura, and Yasunori Mori  
 "Differences in muscle power between the dominant and nondominant upper limbs of baseball players "  
 Journal of Strength and Conditioning Research, 28(1) (2014) 82-86

Takanori Noguchi, Shinichi Demura  
 "Relationship between abdominal strength measured by a newly developed device and abdominal muscle thickness" Advances in Physical Education, 4 (2014) 70-76

Takanori Noguchi, Shinichi Demura  
 "Effect of Differences in the Exercise Frequency of Young People on Abdominal Strength and Muscle Thickness." American Journal of Sports Science and Medicine, 2(6)(2014) 218-221