

## KSN 2017 Abstract

KSN-17-P195

### Epidemiologic Survey of Spinning Induced Rhabdomyolysis

\*Jong cheol JEONG<sup>6</sup>, Eunsoo LIM<sup>6</sup>, Yoo jung KIM<sup>6</sup>, Sung gyun KIM<sup>2</sup>, Seung sik HWANG<sup>3</sup>, Han gil SEO<sup>4</sup>, Jin ho HWANG<sup>5</sup>, Inwhee PARK<sup>6</sup>, Gyu-tae SHIN<sup>6</sup>, Heungsoo KIM<sup>6</sup>

<sup>1</sup>Department of Nephrology, Ajou University Hospital, Korea, South, <sup>2</sup>Department of Internal Medicine, Hallym University Sacred Heart Hospital, Korea, South, <sup>3</sup>Graduate School of Public Health, Seoul National University, Korea, South, <sup>4</sup>Department of Rehabilitation Medicine, Seoul National University Hospital, Korea, South, <sup>5</sup>Department of Internal Medicine, Chung-ang University Hospital, Korea, South, <sup>6</sup>School of Medicine, Ajou University, Korea, South

**Objectives** : Spinning is an indoor exercise which mix cycle to group-led aerobics. Recently, spinning have become the most common cause of exercise induced rhabdomyolysis, however, studies regarding details of spinning are none. We investigated the details of exercise-environment of spinning-induced rhabdomyolysis patients.

**Methods** : We collected onset of symptoms, comorbidities of patients, concurrent medications, weekly activities by Global Physical Activity Questionnaire (GPAQ), motivation for spinning, exercise environment during spinning, grade of perceived exertion by Borg scale. Medical records were reviewed for patients' clinical outcome. For the estimation of odds ratio of spinning to rhabdomyolysis, case-crossover study methods were used.

**Results** : Total 35 (Female 27) patients were enrolled during 18 months of study periods. Mean age was  $26.3 \pm 6.2$  years old. Mean body mass index was  $24.8 \pm 3.8$  kg/m<sup>2</sup>. Mean duration of spinning before coming to hospital were  $71.0 \pm 46.1$  minutes. More than half (54.3%) of the patients developed rhabdomyolysis after the first session of spinning. Mean reported Borg scale was  $17.1 \pm 2.0$ , which is interpreted as "very hard". Thirty-three (94.3%) patients experienced limb exhaustion with the onset time after  $16.9 \pm 14.1$  minutes after spinning. Nineteen (54.3%) patients experienced pain during spinning. Although patients felt pain or exhausted, most did not stop spinning, because they thought "I have to endure this" (n=25, 71.4%) most commonly. Patients started exercise to lose weight (n=24, 82.8%), and chose spinning because of the recommendation from friends (n=16, 55.2%). Reported mean weekly activities were  $2742.3 \pm 2602.1$  Met-min/wk. All patients received instruction from physical coach about water intake, but only 4 (13.8%) received instruction for pain occurrence, and 2 (6.9%) for possibility of rhabdomyolysis. The adjusted

## **KSN 2017 Abstract**

odds ratio of single session of spinning (60 mins) to the occurrence of rhabdomyolysis 36.090 [95% confidence interval (C.I.) 5.439 – 1544.752,  $p < 0.001$ ] (Figure 1).

Mean peak creatine kinase level were  $107,629.7 \pm 48744.2$  IU/ml. Serum creatine kinase decreased below 5,000 IU/ml within 7 days. Single patient developed AKIN 3 stage acute kidney injury which was recovered by conservative non-dialytic management. No patients developed significant proteinuria or hypertension after rhabdomyolysis.

**Conclusions** : Spinning as a vigorous group exercise can cause exercise induced rhabdomyolysis even after one or two sessions of exercise. Gradual increment of exercise dose and intensity are needed to prevent exercise induced rhabdomyolysis.

**Keywords** : Acute kidney injury, rhabdomyolysis, spinning, epidemiology, case-crossover design