척수재활

게시일시 및 장소 : 10 월 19 일(토) 08:30-12:30 Room G(3F)

질의응답 일시 및 장소 : 10 월 19 일(토) 11:00-11:30 Room G(3F)

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The Effectiveness of NDFT or Evaluating Cardiorespiratory Fitness of Cervical Spinal Cord Injury

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This study was designed to evaluate the cardiorespiratory fitness of patients with cervical spinal cord injury. Experimental and field tests have been devised, and recently, the 11-meter and 15-meter modified multiple shuttle run test (MMSRT) wheeling methods have been used to evaluate the cardiorespiratory fitness. However, although the 11-meter and 15-meter MMSRTs are effective in evaluating for people with mild-to-moderate disabilities, it is reported to be difficult to evaluate for people with severe disabilities. Therefore, this study devises aninterval-type evaluation method called NDFT suitable for patients with cervical spinal cord injury and evaluates its effectiveness in conducting the cardiorespiratory fitness test by comparing with the 11-m, 15-m MMSRT wheeling methods.

The subjects of this study were limited to the wheelchair-bound people with spinal cord injury(cervical vertebrae 6-7/ASIA-A). A total of 12 subjects with comparable physical function and basic physical fitness were selected from the pool of 52 former 2010 - 2012 South Korea Paralympic national rugby players. For the study, the 11-m, 15-m MMSRT shuttle wheeling tests and interval-type NDFT were applied to conduct respiratory gas analysis by evaluating the following variables: (1) oxygen consumption (VO2peak, VE, HR, RER); and (2) muscle fatigue before and after exercise (Lactate level). For the statistics of the study, one-way repeated measures ANOVA was used to determine the variability of cardiorespiratory fitness between the 11-m, 15-m MMSRT and NDFT, and Duncan's method was used for post-verification. In addition, a two-way repeated measure ANOVA was conducted before and after exercise to analyze muscle fatigue (Lactate)level. Upon detecting variability, acontrast verification was conducted.

As a result of evaluating the cardiorespiratory fitness using field test method, NDFT resulted the highest value for VO2peak(ml/min/kg), followed by MMSRT 11-m and 15-m, respectively (P <.001). For HR (beat/min), it was found that NDFT, MMSRT 11-m, and 15-m, respectively. MMSRT 11-m resulted the highest mean HR; however, no statistically significant difference was found between NDFT and MMSRT 11-m upon post-verification test. The RER results were as follows: NDFT, MMSRT 11-m and 15-m, respectively. The energy metabolism was the highest in NDFT (p <.001). Lastly, the muscle fatigue levels

(Lactate/mmol) measuring the post-cardiorespiratory fitness test were found to be the highest in NDFT, followed by MMSRT 11-m, and 15-m, respectively ($p < .001$).

The results of this study show that NDFT measures the broadest range of the cardiovascular fitness compared to the conventional MMSRT 11-m and 15-m. Therefore, utilizing NDFT has the potential leading to appropriate exercise regimens for cervical spinal injury patients. In addition, it is expected that NDFT will be able to set the exercise intensity effectively in the future development of exercise programs.