스포츠재활

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)

P 3-34

Effects of X-Factor Increase Program on Swing Performance and Back Muscles of Professional Golfers

Jung Ho Yang[1*], Seong-Ho Jang[1†]

Hanyang University College of Medicine, Seoul, Korea, Department of Rehabilitation Medicine[1]

Objective

X-factor, which refers to the separation angle of both shoulders and pelvis from the backswing top during swing, is closely related to the distance, and it is reported that the stretch of X-factor is closely related to the increase in driving distance of shots. In this regard, quantitative analysis between X-factor and various variables including swing performance and back muscle as well as distance is necessary. This study analyzed the effect of X-factor increasing program on swing performance and back muscles of female professional golfers.

Methods

Initially comprised of 15 members of the Korean Ladies Professional Golf Association(KLPGA), we randomly allocated 8 participants to conventional training group(conventional group) and 7 to X-factor increase program group(X-factor group). The exercise program of the X-factor group consisted of eight main exercises related to the increase of the X-factor, which was developed to apply to this study for the increase of the X-factor of the athletes and the distance improvement. The study was finally performed to 4 participants in conventional group and 6 in X-factor group after 5 participants were dropped. Participants underwent imaging studies and physical examination for accurate clinical diagnosis. The measurement of the evaluation items was carried out twice before and after application of exercise program with the total of six weeks swing coaching and exercise. We performed swing motion analysis using K-vest, ball trajectory evaluation using Trackman Pro, and lumbar spine magnetic resonance imaging(MRI) to measure the cross-sectional area of multifidus muscle, the antero-posterior surfaces based on the facet joint and the left and right sides based on the rear end of spinous process, at transverse plane of L5 and S1 level in lumbar spine MRI.

Results

We found that the rotation speed of the pelvis and the upper body in the X-factor group was higher than that of the conventional group. When comparing the effect of multifidus muscle hypertrophy, the cross-sectional area increased by 3.8% in control group and 8.8%

in X-factor group. Relatively, the muscle hypertrophy of X-factor group was more than 2 times higher compared with conventional group, but it was not statistically significant.

Conclusion

Compared to conventional swing coaching, X-factor increase program after measuring the body angle is more advantageous for increasing muscle strength. Although it is difficult to judge whether there was a significant change in actual swing performance after short-term examination, we can expect long-term injury prevention and gradual improvement in performance through the golf swing protocol suggested in this study. Furthermore, by developing virtual reality contents using ergonomic sensing other than clinical approach, we believe it is possible to create a system that can intuitively grasp the competence of an athlete.

Acknowledgment :Acknowledgement This research was supported by the Research and Business Development Program funded by the Korea Institute for Advancement of Technology(KIAT) and the Ministry of Trade, Industry and Energy(MOTIE)(P0004756, 2019)