The differences of body weight movement and shooting speed according to the shooting stance during Korean traditional archery shooting motion.

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(Background)

- Life Shooting and archery can be classified as sports requiring static physical strength in contrast to general dynamic physical strength.
- The Korean traditional archery, called "Gukgung", is similar to modern competitive archery. However, there is a big difference in the archery shooting stance.
- There are two types of shooting stance: one is an oblique stance that standing by oblique to the target, and other is parallel stand to the target.
- The changes of kinematic factors during archery shooting motion are still unknown in Korean traditional archery.

(Purpose)

This study aims to evaluate of the differences of body weight movement and shooting speed during archery shooting motion according to the shooting stance of Korean traditional archers

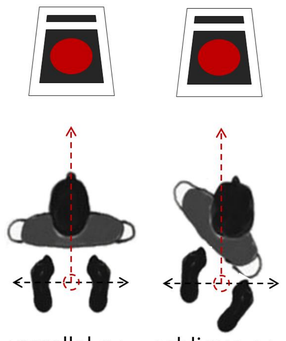
(Methods)

1. Subject :

Ten men Korean traditional archers were divided into two groups according to the shooting stance; parallel stance group(PSG, n=5) and oblique stance group(OSG, n=5).

2. Shooting stance :

The comparison of stance between parallel and oblique stance. The parallel stance is standing parallel to the target. The oblique stance is standing oblique to the target.

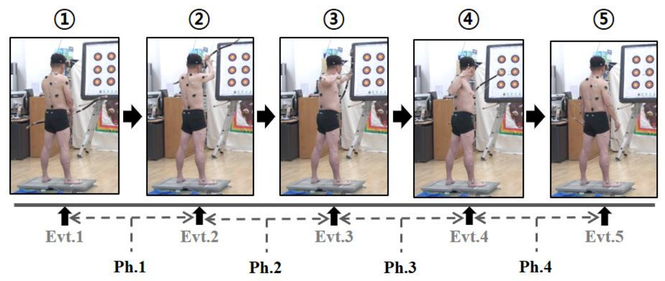


3. A statistical analysis :

by SPSS 22.0
Independent t-tests
One-way ANOVA (with LSD)
Pearson's correlaiton coefficient
The significance level : $p < 0.05$

(Methods)

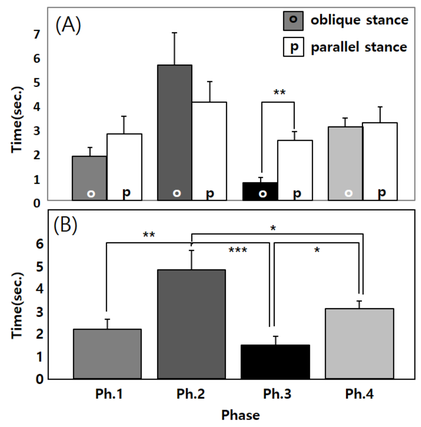
4. The phase and event classification :



The phase and event classification of shooting sequence in Korean traditional archers. ① "Junbi"(Set), ② "Geogung"(Set up), ③ "Manjak"(Full draw), ④ "Balsi"(Release), ⑤ "Mamuri"(Follow Through & Ending).

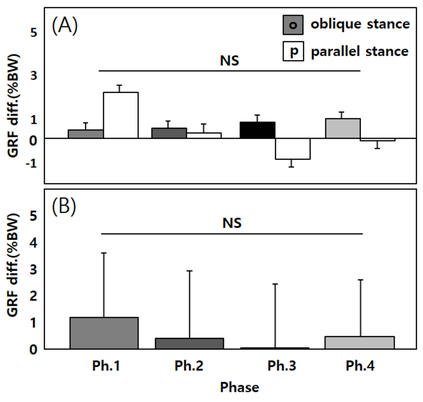
(Results)

1. The comparison of time :



The comparison of time among each phages. (A) The comparison of time between parallel and oblique stance group. (B) The comparison of time among total subject. *:p<.05, **:p<.01, ***:p<.001 between two groups. Independent T-test and LSD post hoc tests were used for multiple comparisons. Values are expressed as the mean±SE.

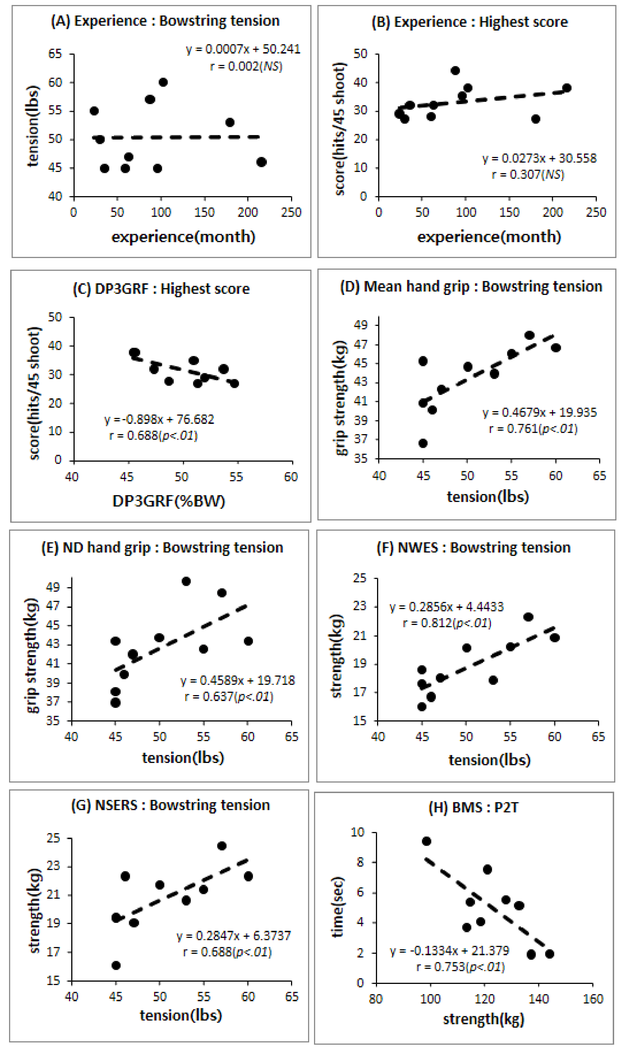
2. GRF diff.(%) among each phases :



The comparison of GRF diff.(%) among each phages. (A) The comparison of GRF diff. between parallel and oblique stance group. (B) The comparison of GRF diff. among total subject. GRF diff. was calculated by dominant leg GRF(%) minus non-dominant leg GRF(%). GRF, ground reaction force. NS, no significant differences. Values are expressed as the mean±SE.

(Results)

3. The relationship among each variations:



The relationship among archery experience, bowstring tension, highest score, hand grip strength, time and each joint muscle strength. NS, no significant differences. Pearson's correlation coefficient was analyzed to evaluate the correlation among measured variables.

(conclusion)

These results suggest that Korean traditional archery requires the muscular strength of various joints in the dominant arms, and the parallel stance is might more advantage to shoot than oblique stance.

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