AIMING STRATEGY AFFECTS PERFORMANCE RELATED FACTORS IN BIATHLON STANDING SHOOTING

Köykkä M¹, Ihalainen S², Linnamo V¹, Ruotsalainen K¹, Häkkinen K¹, Laaksonen MS³

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland
²KIHU – Research Institute for Olympic Sports, Jyväskylä, Finland
³Swedish Winter Sports Research Centre, Department of Health Sciences, Mid Sweden University, Östersund, Sweden

PURPOSE
To investigate differences in shooting performance and performance related factors between the HOLD and the TIMING strategy in biathlon standing shooting.

METHODS
• Shooting performance and aiming point trajectory were measured from each shot in 23 biathletes at REST and in RACE (Figure 1).
• Based on the mean distance-time profile of the aiming point, approach velocity (AV) was calculated for each biathlete (Figure 2).
• 10 biathletes with the lowest AV in REST were categorized as HOLD and 10 biathletes with the highest AV in REST as TIMING.

RESULTS
Both groups demonstrated similar shooting performance both at REST and in RACE.

In HOLD, better shooting performance was related to higher holding time (HT)
- REST r=-0.88, p=0.001
- RACE r=-0.73, p=0.016
higher aiming accuracy (COG)
- REST r=0.93, p<0.001
- RACE r=0.72, p=0.018 (Figure 3).

In TIMING, better shooting performance was related to lower mean velocity (MV)
- REST r=0.77, p=0.009
- RACE r=0.88, p=0.001
lower absolute triggering value (ATV)
- REST r=0.82, p=0.003
- RACE r=0.72, p=0.012 (Figure 3).

CONCLUSIONS
• Biathletes using HOLD should focus on their aiming accuracy and holding ability.
• Biathletes using TIMING should focus on their ability to approach the target straightforwardly at a controlled velocity and the ability to minimize the movement of the aiming point during the triggering phase.

PRACTICAL APPLICATIONS
• Biathletes and coaches should be aware of the strategy in use and plan the shooting technical exercises accordingly.
• Despite their faster approach, also timing shooters should decrease aiming point velocity before triggering.