

# DEVELOPMENT OF A RECORDING SYSTEM TO EMPIRICALLY ANALYSE THE SHOOTING CHARACTERISTICS OF A CLAY PIGEON SHOOTER

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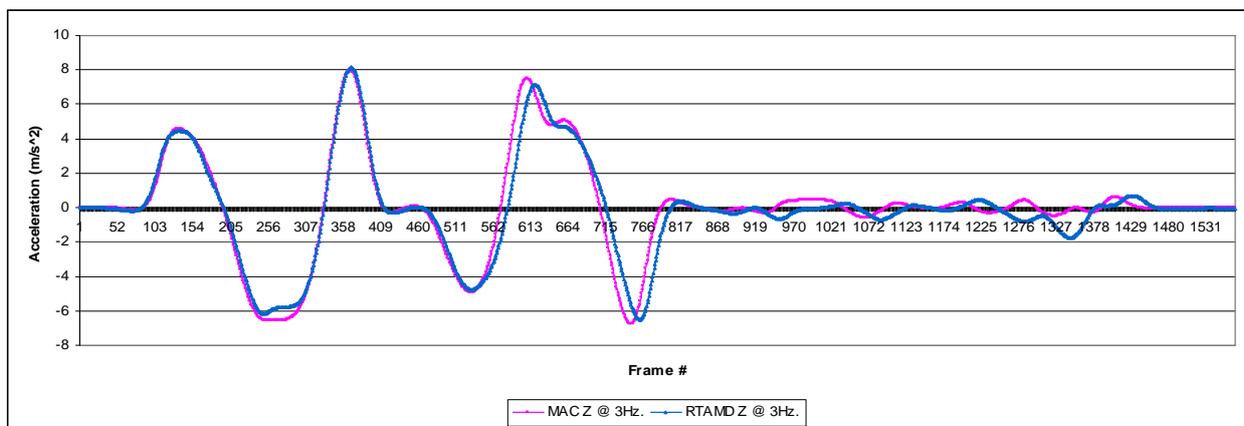
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**KEY WORDS:** real time acceleration measurement device, clay pigeon shooting, motion analysis.

**INTRODUCTION:** There is a dearth of published information with regard to the sport of clay pigeon shooting. The discipline involves the shooter firing a shotgun at a disc of clay, which is released within a known area but with an unknown trajectory. If the shooter hits the target, the clay breaks and the shooter receives instant feedback on the outcome of the shot. However, if the shooter misses the target the situation requires more analysis. The coach would hugely benefit from a method which gives empirical evidence outlining the kinematics of the shot. This project will first attempt to identify the relevant characteristics i.e. timings within the shot, acceleration/movement of the gun. Once identified, the variability within these characteristics will be evaluated against the shot outcome results from a commercially available shooting simulator (Dryfire, Derby, UK).

**METHODS:** The preliminary stage of the project is to verify that the real time acceleration measurement device (RTAMD) correlates with acceleration data calculated from a motion analysis system (Motion Analysis Corporation, CA, USA). A reflective marker was placed directly on the RTAMD which was moved along the surface of a table.

## RESULTS:



**Figure 1 Comparison graph illustrating difference between acceleration (Z direction) calculated using a motion analysis system (MAC) and the RTAMD**

Figure 1 illustrates the agreement between calculated acceleration in RTAMD and MAC. The root mean square error between the calculated accelerations is 0.565646 m/s/s. Preliminary results from a comparison between MAC and RTAMD are very promising.

**CONCLUSION:** This is a novel research project which attempts to develop a measurement scheme (coaching tool) for analysing the shooting characteristics of clay pigeon shooters, thus bridging the gap between lab based testing and in the field analysis.

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