



Working Trials Research Proposal

Introduction

It is evident that health and welfare are foremost in the minds of all those involved in working trials (WT). However, a significant division of opinion has evolved relating to the potential injury risks associated with the agility obstacles of working trials, specifically the scale and the long jump at 9ft. It is also apparent that many potential newcomers are dissuaded from participating in working trials due to their concerns that there is a high risk of injury for dogs doing the scale.

Anecdotally it appears many musculoskeletal injuries associated with working trials dogs tend to be chronic repetitive strain type injuries, which may or may not lead to more substantial injuries leading to forced retirement from the sport. Reports of catastrophic injuries occurring on the training or competition field whilst undertaking one of these obstacles appear to be rare. Therefore, whilst some point to the fact that WT is the only dog sport which has continued to use these obstacles in their current format and similar sports and police dog training programmes have adapted these exercises, others point to the fact that it is not possible to confidently attribute causality of an injury to these working trials obstacles without additional data. Only one study has been conducted in relation to Working Trials^{1,2,3}. This research has not evaluated kinematic and kinetic data on surfaces similar to that experienced by dogs training/competing in Working Trials.

To facilitate an evidence-based decision-making process in relation to any rule changes within working trials, further research is needed to determine the impact to the dogs jumping these obstacles in working trials conditions. Research in relation to the current obstacles and alternatives/adaptations to these obstacles is required to inform future decisions in relation to the health and welfare of working trials dogs.

Literature Review

The research conducted by Carter and Williams (2021) is the first and only research conducted in relation to Working Trials (WT). It was undertaken to evaluate the kinetic and kinematic (biomechanical) effects of the scale and the long jump on the musculoskeletal system of the working trials dog. This study¹ was conducted to investigate peak vertical forces and joint angles involved when performing the aforementioned WT obstacles.

The aim of the study in relation to the scale was to determine whether an alteration in scale height impacts peak vertical landing force and apparent joint angles on landing in experienced dogs routinely training and competing in working trials³. The aim of the study in relation to the long jump study was to determine whether altering the length of the long jump impacted PVF and apparent joint angulation upon landing²

Unfortunately, this study presents with several limitations. The most significant limitation is related to the fact that the study of both these obstacles was conducted on a sand fibre mix. It is essential that study conditions are such that the results can be extrapolated to the realworld situation. In this situation the use of a sand/fibre mix surface (developed to reduce the peak force velocity in equine athletes) can be expected to have produced significantly different peak force velocity and carpal angles, compared to that experienced by dogs in training/competition conditions. Jumping a scale or



long jump on grass/under usual working trials conditions can be assumed to produce significantly higher peak vertical force values. Therefore, the actual values and results from this study are unlikely to be a true reflection of those experienced in normal conditions.

Other limitations observed are in relation to sample size (no power analysis was completed) and at no point are the forces exerted on the hindlimbs or the range of motion forces dissipated through the spine considered. The range of forces measured was also quite limited.

Research in the areas of health, welfare and injury prevention in dogs and horses, attributes higher forces and joint stress to a greater risk of injury. There is currently insufficient data in the area of working trials in relation to these variables.

Proposal

Further research in the area of Working Trials is requested. The purpose of this research is to obtain data in relation to impact and joint stress experienced by working trials dogs. This data can be used to determine if the scale or long jump should be altered or replaced to adequately protect the health and welfare of the dogs.

Objectives

- A restructured research design is proposed to adequately address the objectives listed below:
- Determine the forces experienced by the hindlimbs when ascending the scale and A-frame.
- Determine the forces experienced by the forelimbs on landing on grass from:
 - The scale
 - The A-frame (KC agility & IGP versions)
- Determine the range of motion occurring at the following joints when landing from the scale and the two types of A-frame;
 - Carpus
 - Glenohumeral joint
 - Spine – cervical, thoracic, lumbar, lumbosacral
- Determine the peak vertical force experienced by the forelimbs on landing over the long jump at differing lengths.
- Determine the range of motion experience at the following joints when traversing the long jump at each length;
 - Carpus
 - Glenohumeral joint
 - Spine – cervical, thoracic, lumbar, lumbosacral
- Discussion and likely metanalysis will be carried out in respect of the risks of a scale with a slope descent or platform.

Methodology

The research methodology will be finalised by the selected research institution. However, it would follow the basic outline below.

- Ethical approval will be requested from the appropriate institution depending on the location of the research.
- Sample: A sample size large enough to produce statistically significant results would be required. This would be determined by the research institution based on a power analysis,



whereby the statistician comes in and works out what size the sample needs to be to produce results which can be deemed statistically valid.

- Inclusion criteria: Dogs which are over 18 months of age, have competed in Working Trials competition having successfully completed the jumps with full marks, and have no history of orthopaedic or neurological injury or will have received a letter from a veterinarian to state that the problem resolved greater than 12 months ago, and since then, have successfully completed the scale and long jump in competition. A variety of breeds will be included.
- Exclusion criteria: Dogs which do not meet the inclusion criteria.
- The study will be carried out on grass to reproduce equivalent environment to that experienced during working trials training and competition. Appropriate equipment will be used to measure the quantitative and qualitative data below. It is anticipated this will include a pressure pad, reflective markers on skeletal bony landmarks and video analysis whose use would be based on validated methods of analysis.
- Each dog will complete each obstacle by a set method a minimum number of times.
- The following quantitative data will be collated from each dog:
 - Kinetic data – the range of force data would be obtained from a pressure pad.
 - Kinematic data – joint range of motion would be measured using reflective markers, video analysis via a validated method.
- The following qualitative data would be obtained:
 - Method of descending each obstacle
- Statistical Analysis methods will be determined by the research institution.

This finer detail of the methodology will be determined in liaison with the researchers from the chosen research institution. The WT committee reserve the right to determine which University is best suited to this type of biomechanical research based on an analysis of the quality of previously published research papers by the institution.

Conclusion

An abundance of studies exists in relation to agility dogs and have been used to inform rule changes and injury prevention in agility sports world-wide. It is not possible to directly extrapolate the findings in agility directly to the obstacles in Working Trials due to the significantly different nature of the obstacles. Nor can comparisons be made in relation to the impact forces experienced by WT versus agility dogs due to the nature of the surface used in the single WT study completed by Carter et al (2021).

As with studies conducted to examine injury prevention in other quadrupeds (agility canines and equines) accurate impact forces and joint stresses are necessary to inform the decision making process to ensure that the health and welfare are foremost in the sport of Working Trials. The need for further research in this area is supported by the authors of both published WT studies^{2,3}.

Therefore, approval for a further study in relation to working trials, at a university which specialises in biomechanics, is requested to address the scientific knowledge gaps and the limitations presented in making informed decisions regarding the suitability and safety of the scale and long jump in their current form as obstacles in Working Trials.



References

1. Dr Anne Carter and Dr Ellen Williams

Investigating the impact of working dog trials obstacles on kinetics and kinematics of dogs
Unpublished Report

2. Williams E., Carter A., and Boyd J. (2021)

Kinetics and Kinematics of Working Trials Dogs: The Impact of Long Jump Length on Peak
Vertical Landing Force and Joint Angulation

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3. Carter A, Boyd J and Williams E (2022)

Understanding the Impact of Scale Height on the Kinetics and Kinematics of Dogs in
Working Trials

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