Proportional and Kinematic Analysis of Sprint Start Techniques in Youth Athletes

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Background

- Starting technique can significantly impact an athlete's ability to accelerate quickly over a short distance which is a valuable skill for a successful performance in many sports.
- Research suggests that **95%** of individuals intuitively take a step backwards, known as a false step, in order to initiate forwards momentum[1].
- The false step was believed to be counterproductive[2] but research has since proven it to be a superior method to the parallel start by 5-14%[3].

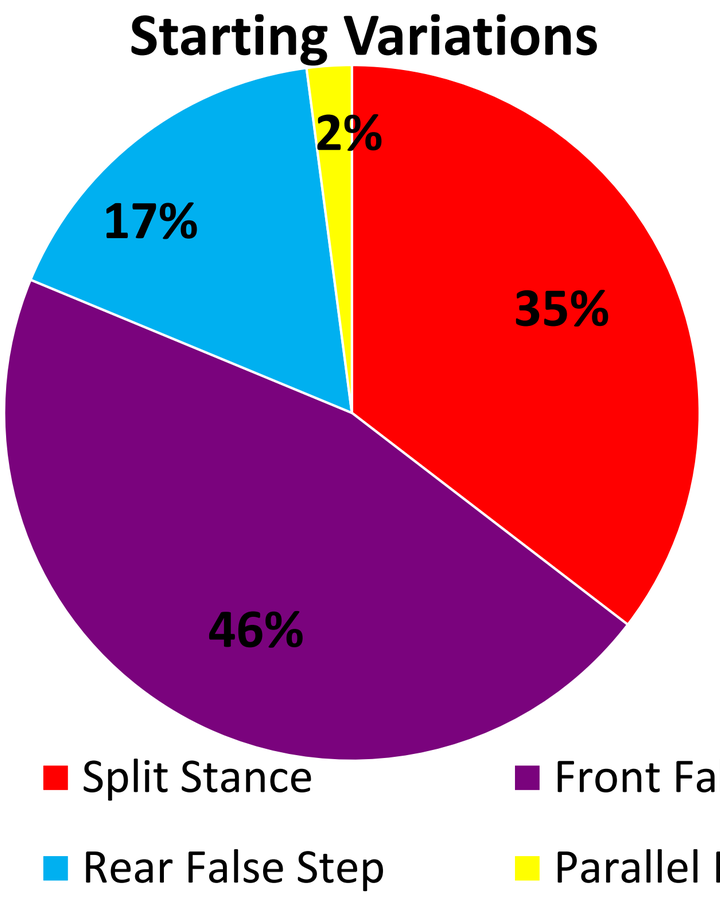
Methods

- 32 trained males aged 13-14 years.
- Four different standing starts were expected to be observed; **split stance, parallel false, front false step and rear false step.**
- Three 5-m sprints trials, beginning in their own time, 90s rest between each trial[3].
- Kinematics were assessed using a high speed camera.

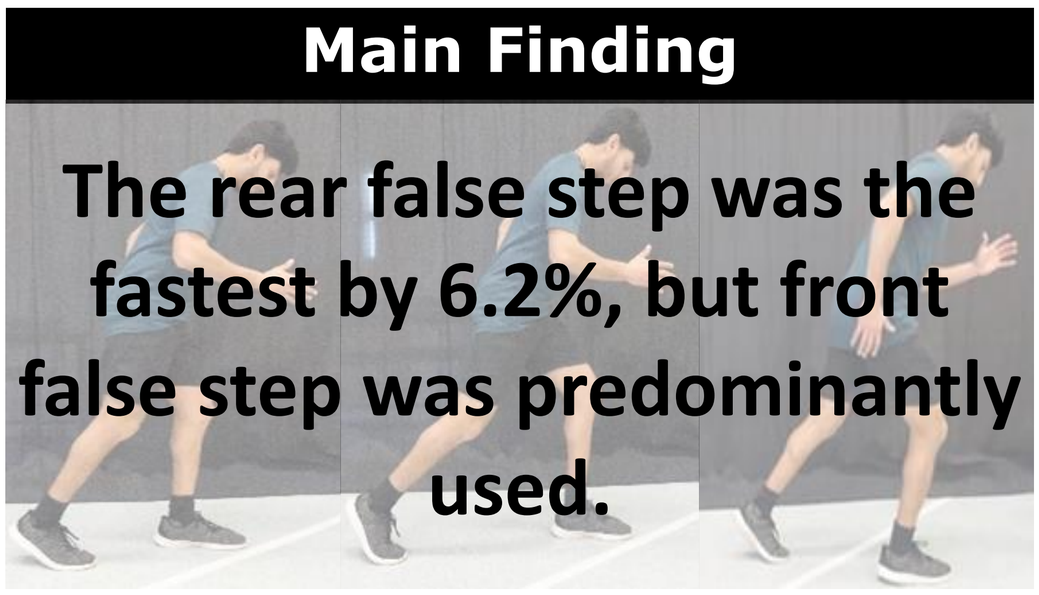
Purpose

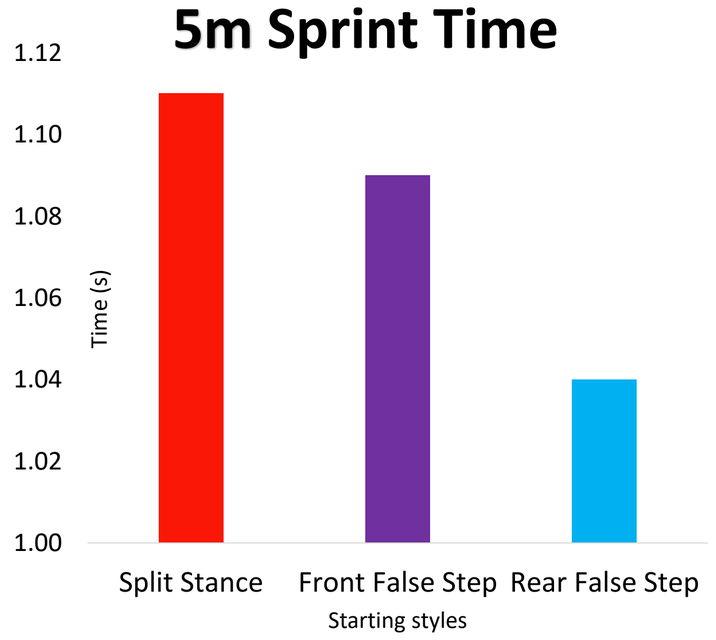
The purpose of this study was to determine the prevalence rate of the various instinctive sprint start techniques in youth athletes and investigate which kinematic parameters determined a successful 5-metre sprint performance.

Results

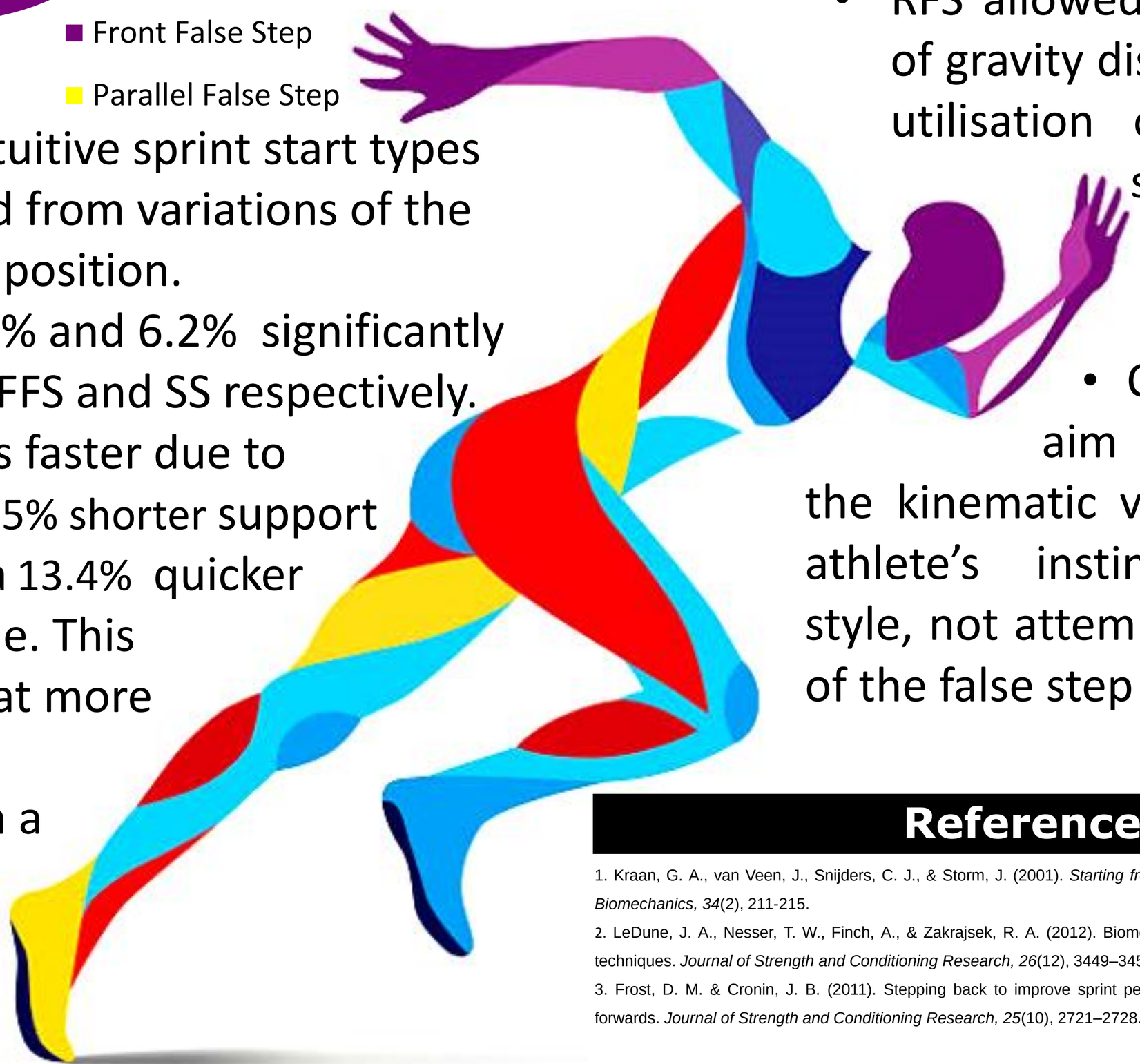


Main Finding





- 97.9% of intuitive sprint start types commenced from variations of the split stance position.
- RFS was 4.8% and 6.2% significantly faster than FFS and SS respectively.
- The RFS was faster due to having a 64.5% shorter support phase and a 13.4% quicker impulse time. This suggests that more force was produced in a shorter time.



- RFS allowed greater centre of gravity displacement and utilisation of the stretch shorten cycle mechanism.
- Coaches should aim to improve on the kinematic variables of the athlete's instinctive starting style, not attempt to coach out of the false step technique.

References

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