Dear Editor,

We thank Carson and Collins [1] for their commentary on our recent current opinion article, Challenging Conventional Paradigms in Applied Sports Biomechanics Research [2], which consolidated and extended our previous work in this area [3–5]. Our article critically evaluated empirical and theoretical (computer simulation modelling) approaches that have been commonplace in the applied sports biomechanics literature since the 1980s, specifically their capacity to provide information that could be used to optimise the techniques of individual athletes. We concluded that these conventional paradigms are unable to reliably identify which aspects of a particular athlete’s technique are associated with better performance, nor can they reliably predict how performance will change should a particular aspect of an athlete’s technique be modified. Consequently, the information that these traditional approaches yield has limited practical application and utility, particularly in terms of being able to prescribe what technical changes a particular athlete needs to implement—and, indeed, is capable of implementing—to improve performance and reduce injury risk.

Carson and Collins’ [1] first criticism is that our conclusions, specifically regarding group-based analyses, are neither novel nor particularly current, before citing some of their studies that have apparently demonstrated that an individual-based approach is required when modifying technique. We do not contest this viewpoint—indeed, we consider it to be somewhat self-evident—but Carson and Collins [1] appear to overlook the basic point we were attempting to convey in our article, which was that the information obtained from group-based analyses cannot necessarily be applied to specific athletes for reasons summarised, for example, by Fisher et al. [6]. Since much of the published research is based on group-based analyses, in our article we urged applied sports biomechanists and coaching practitioners to avoid literal interpretation of data and be cautious when using this information to inform coaching interventions. Ultimately, if applied sports biomechanics research is to have greater impact on coaching practice and sports performance, which must surely be the overarching aim of all applied sports science research, alternative approaches need to be explored, and we intend to do so in a follow-up article.

The other main criticism of Carson and Collins [1] was that our article lacked translational impact because of its unidisciplinary focus and limited epistemological stance. However, we feel this criticism is unjust, as it was not our intention to consider how the information derived from conventional paradigms in applied sports biomechanics should be used in the coaching process to modify an athlete’s technique or how biomechanics should integrate with other subdisciplines in an interdisciplinary and multifaceted approach to skill refinement. While Carson and Collins’ [1] research may be of interest to, and viewed as a useful adjunct by, some readers, it is, nevertheless, beyond the scope of our analysis. For the record, we agree that an interdisciplinary approach would be advantageous when attempting to make changes to technique, as it is when evaluating sports performance more generally [7], but we would recommend an approach that has greater theoretical coherence than that advanced in the work of Carson and Collins [1].

Compliance with Ethical Standards

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Conflict of Interest Paul Glazier and Sina Mehdizadeh have no conflicts of interest that are directly relevant to the content of this letter.
References