

CORRELATION BETWEEN ISOMETRIC MID-THIGH PULL PERFORMANCE WITH OVERGROUND SPRINTING IN MALE YOUTH ICE HOCKEY PLAYERS



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Introduction

Isometric mid-thigh pull (IMTP) data can be used to assess an athlete's maximal force output. IMTP data is associated with overground sprint capacity across different sports. Overground sprint capabilities translate closely to ice skating performance. Few studies have explored this association in youth ice hockey players.

Purpose

Determine the association between IMTP performance and sprint capacity in youth ice hockey players.

Methods

Twenty-four competitive youth ice hockey players participated in the study. Subjects performed an IMTP testing protocol and then performed a series of overground sprints.

Isometric mid-thigh pull

- Iron bar was adjusted to mid-thigh height of the athlete.
- Athlete produces maximal force by pulling the bar vertically for 5 seconds.
- RFD was calculated across the entire trial and at intervals of 0-50 ms, 0-100 ms, 0-200 ms, and 0-300 ms.



Overground Sprint

- Two 40-yards sprints were administered per subject.
- Timing gates collected completion time at 10-yards and 40-yards.



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Methods

During IMTP trials, vertical forces were obtained using force platforms at a sampling frequency of 1000 Hz. Peak force was calculated as the maximum force during the IMTP trial. Averages were used for statistical analysis. Spearman's Rho correlations were used to explore associations between variables of interest.

Figure 1: Association between Peak Force and 10yd Sprint Time

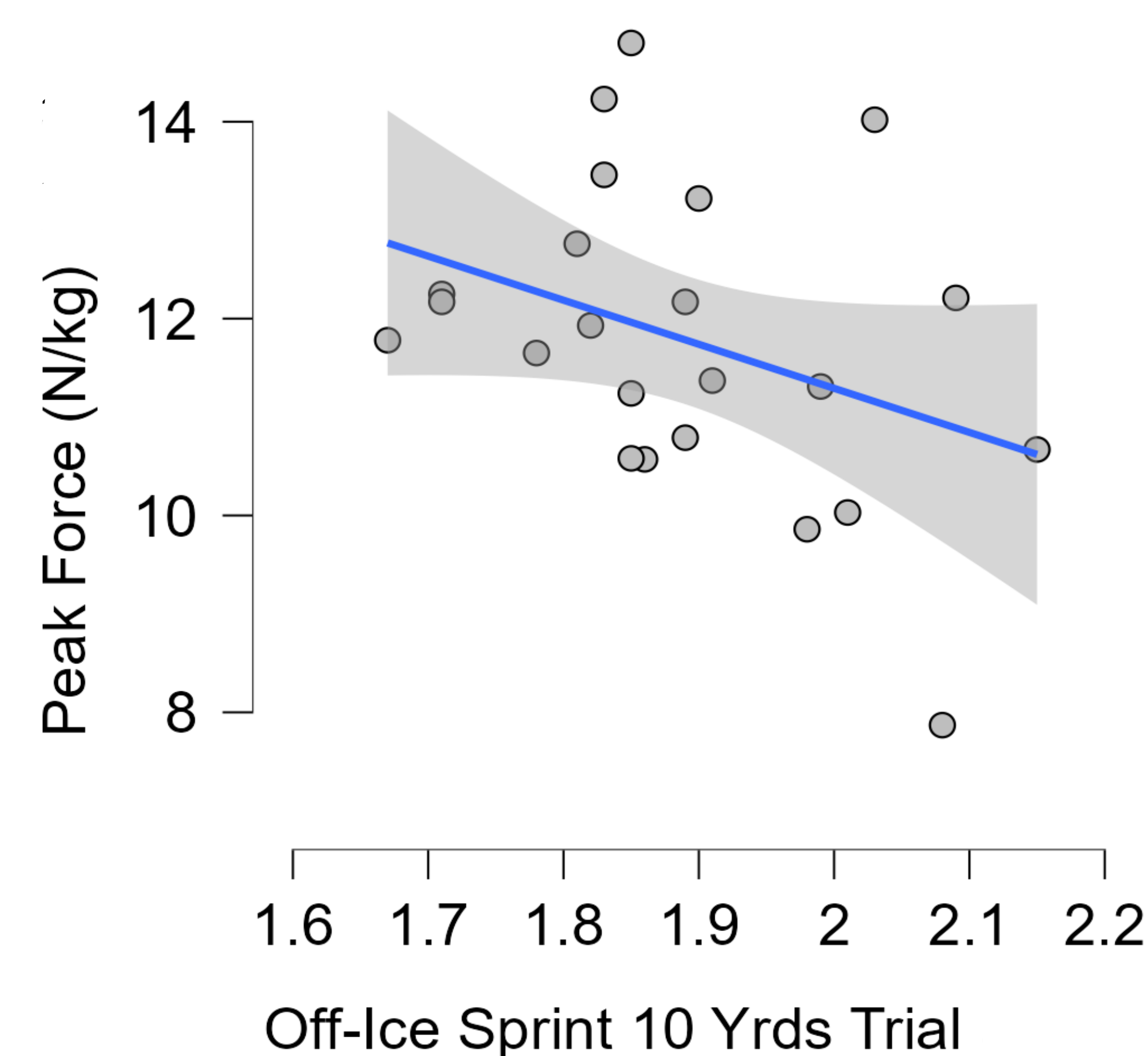
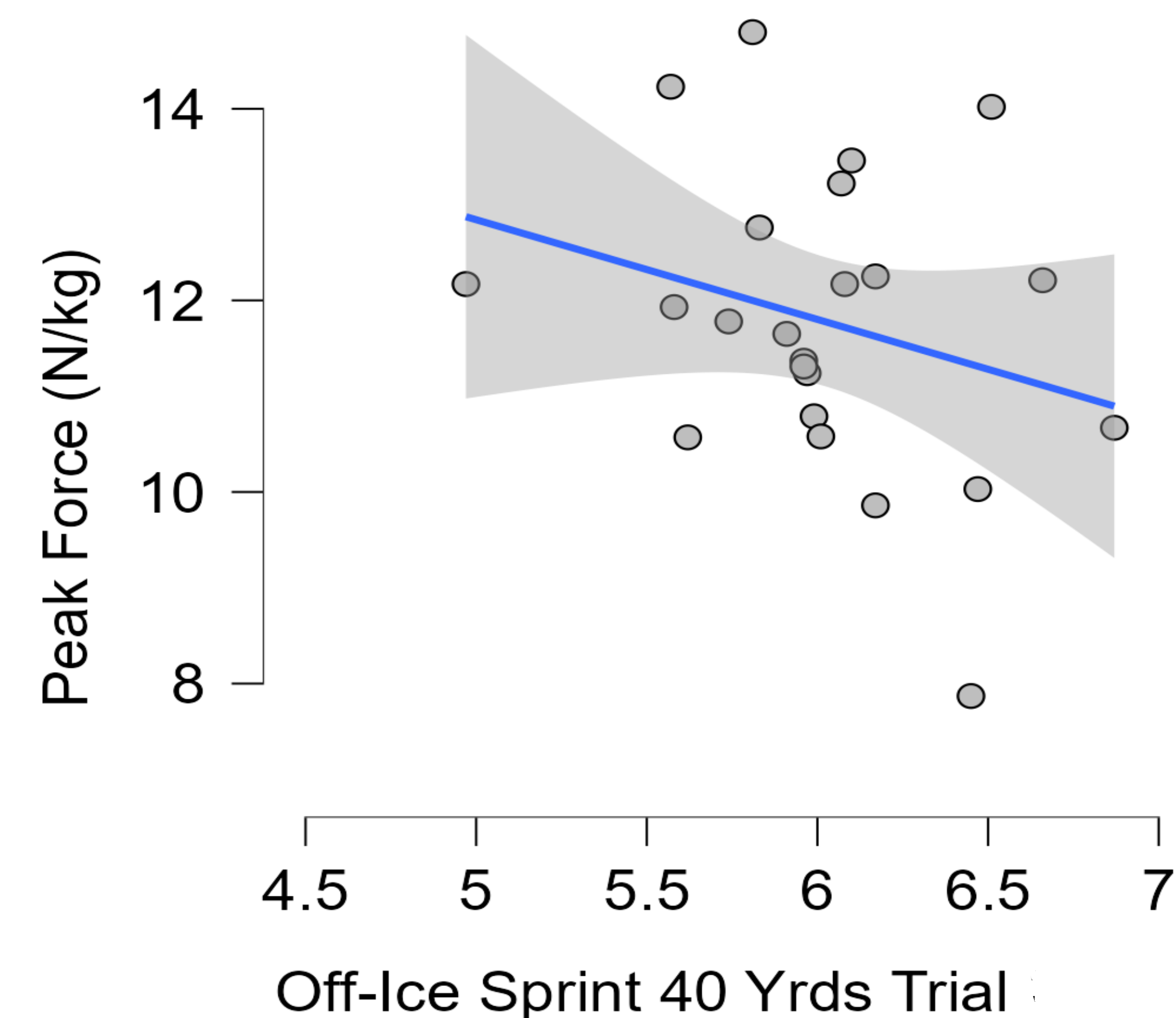


Figure 2: Association between Peak Force 40yd Sprint Time



Results

- Figure 1: Peak force was weakly negatively correlated with 10-yard sprint time ($r_s = -0.363$; $p = 0.088$).
- Figure 2: There was a non-significant correlation between peak force with 40-yard sprint time ($r = -0.221$; $p = 0.312$).
- There was non-significant negative correlations between average RFD with 10-yard sprint time ($r = -0.017$; $p = 0.937$) and 40-yard sprint time ($r = -0.180$; $p = 0.441$).
- There were non-significant associations between RFD 0-50ms, 0-100ms, 0-200ms, 0-300ms with 10-yard sprint time ($p > 0.05$) and 40-yard sprint time ($p > 0.05$).

Conclusion

- Average RFD and Peak Force had no correlation with 10-yard and 40-yard overground sprint completion time.
- RFD 0-50 ms, 0-100 ms, 0-200 ms and 0-300 ms displayed no correlations with overground sprint completion times.

Practical Application

Ice hockey practitioners may benefit from implementing other force development assessments that may more strongly correlate with overground sprinting and sport-related activities.

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