More experienced boxers display closer peak velocities between hands during the landmine punch throw compared to less experienced boxers [abstract only]

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MORE EXPERIENCED BOXERS DISPLAY CLOSER PEAK VELOCITIES BETWEEN HANDS DURING THE LANDMINE PUNCH THROW COMPARED TO LESS EXPERIENCED BOXERS

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PURPOSE

To assess the speed-strength component of punching, the landmine punch throw can be used thanks to its similarity to punching movement patterns. This exercise is a whole-body ballistic movement whereby an athlete pushes and throws one end of the barbell at approximately a 60° angle from the floor while the other end of the barbell is inserted into a landmine attachment on the floor. With a similar movement pattern to a punch, the landmine punch throw requires coordination of the lower body, trunk, and upper body: coordination that should theoretically increase as a boxer becomes more proficient with their movements. Since boxers usually have a preferred hand, using the landmine punch throw may be able to differentiate performance between hands, which can be tracked over time as a boxer becomes more experienced. However, this idea has not been tested, meaning that it is unknown whether the landmine punch throw can provide such information. The purpose of this study was to determine how a boxer's years of training experience (YE) influence the peak velocity (PV) of a landmine punch throw with either hand.

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METHODS

Fourteen healthy boxers (24.1 ± 4.3 y, 72.6 ± 10.1 kg, 176.9 ± 8.3 cm, 7.1 ± 5.4 YE) volunteered for this study. All of the tests were performed in a single testing session that included standardized mobilization and dynamic warm-up exercises, followed by three different landmine punch throw variations (seated without trunk rotation [LPwo], seated with trunk rotation [LPw], and standing with trunk rotation and the use of the legs [LP]); with the rear hand (RH) and lead hand (LH); all in randomized order with 3 min of inter-set rest. To assess peak velocity (PV) during landmine punch throw variations, a GymAware power tool was attached to the throwing end of the barbell. To determine how PV can be influenced by YE, PV was modelled as a function of LP variation and hand in interaction with YE.

	β	Standard Error	*p*-Value
LP	**0.024**	**0.010**	**0.033**
LPw	**-0.002**	**0.010**	**0.918**
LPwo	**-0.006**	**0.010**	**0.672**

Table 1. Comparison of effect of years of experience (YE) on peak velocity (PV) of landmine punch throw (LP), landmine punch throw with trunk rotation (LPw), and landmine punch throw without trunk rotation (LPwo) performed with rear hand (RH) with their Effect estimate (β), Standard error, and *p*-Value.

RESULTS

There was a significant interaction between YE and landmine punch throw variation ($p < 0.001$), and between YE and hand ($p < 0.01$). Specifically, the effect of YE on LP PV ($p < 0.001$) was significant, but not for LPwo or LPw ($p = 0.158$). For example, in LP with RH, YE had significant effect on LP PV ($\beta = 0.024$ [SE 0.010], $p = 0.033$), but no significant effect on LPw PV ($p = 0.918$) or LPwo PV ($p = 0.672$). This finding also occurred in the LH.

CONCLUSION

These data show that a greater YE reduced the differences in PV between the RH and LH for LP (with the coordinated use of the legs, trunk, and arms). However, when using LPw and LPwo, there was no effect of YE on PV. This indicates that as a boxer becomes more experienced, the difference in PV between the RH and LH may disappear during full-body movements that require high levels of coordination. This means that with enough training experience, it may be possible that a boxer's RH and LH can achieve similar PV during punch-related movements.

PRACTICAL APPLICATIONS

The use of LPwo and LPw may be considered by strength and conditioning professionals as feasible tools for assessing the speed-strength component of punching to eliminate the influence of YE between boxers with different experience levels.