OVERALL AND EXERCISE PACE AND WORKLOADS WERE DIFFERENT ACROSS EACH WORKOUT OF THE FIRST HIGH-INTENSITY FUNCTIONAL TRAINING OPEN COMPETITION

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INTRODUCTION

Traditional programming usually employs similar exercise regimens within and across mesocycles (4). Strength coaches manipulate training workloads by adjusting prescribed intensity, volume, and/or density to facilitate adaptations and reduce the risk of overtraining and injury. This is not a simple task with a high-intensity functional training setting (HIFT).

Daily HIFT workouts vary in programmed exercise combinations, intensity loads, required repetitions, and workout structures (2, 3). Some workouts require athletes to repeat the same circuit for 'as many repetitions as possible' (AMRAP) within a set time limit, whereas others ask them to complete assigned work as quickly as possible. With multiple factors being different, multiple calculations must be performed each day to quantify and equate assigned work.

Although established methods exist (5), it is uncommon for coaches to program HIFT workouts based on calculated workloads (9). Coaches may view these calculations as an unnecessarily tedious task to perform each day, or they may be simply unsure how to do them correctly. The purpose of this study was to provide a standard resource for calculating workloads for each exercise appearing in the first ever HIFT Open competition. The second purpose was to compare assigned overall and individual exercise workloads for men and women across each workout.

CONCLUSIONS & PRACTICAL APPLICATIONS

Overall and individual exercise repetition completion rates, total volume loads, and volume completion rates were different in nearly every comparison. This is consistent with the definition of HIFT (3). Athletes should be prepared to complete a variety of workloads at both slower and faster completion rates.

Men completed more work and at a faster rate than women on each exercise within each workout. This is consistent with previous reports (6, 7, 10), and likely the result of arbitrary prescription. It is unclear whether these original workouts were designed to be too easy for men or too hard for women. More equitable workloads may be assigned if programming were based on an expected volume load calculation, rather than arbitrary load assignments.

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METHODS

Participants

Random sample, ~70% of all men (n = 4,922) and women (n = 2,137) who completed all six workouts of the 2011 Open competition (2).

Dependent variables

Official scores converted into **repetition completion rate** (repetitions·min^{-1}) and total volume load. Exercise repetition counts inferred from workout details (2)

Exercise volume load (kg·m)

Product of pescribed loads and/or standard body mass (6, 7, 10), estimated distance traveled (**Figure 1 & Table 1**), and repetitions completed

Exercise repetitions and volume loads divided by adjusted duration (workout time divided exercise count) to create **Exercise repetition completion rate** and **Volume load completion rate** (kg·m·min^{-1}).

Figure 1. Standard body height and mass averaged from previous reports in HIFT athletes (6, 7, 10) and proportional limb lengths (1, 8, 11).
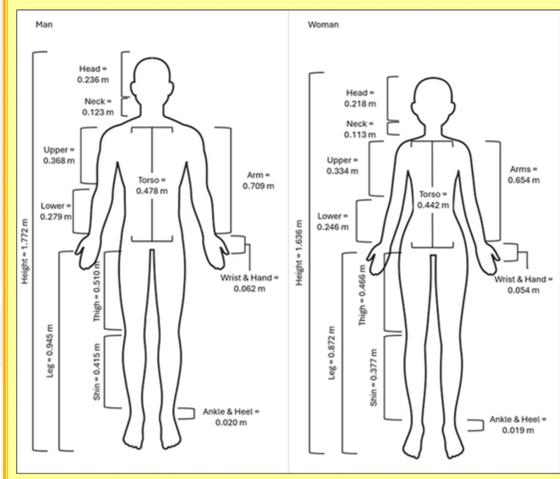
Table 1. Open workout details and volume load calculations

Workouts	Duration	Prescription	Standard Mass	Standard Distance
11.1	10-minute AMRAP	30 x Double-unders	Men: 85.6 kg; Women: 62.6 kg	0.127 m
		15 x Power snatches	Men: 34.0 kg; Women: 25.0 kg	Men: 1.89 m; Women: 1.74 m [(Height - 1/2 Shin) - (Ankle + Heel) - head and neck] + Arm length
11.2	15-minute AMRAP	9 x Deadlifts	Men: 70.3 kg; Women: 45.4 kg	Men: 0.72 m; Women: 0.66 m; Distance = Leg - (0.5 x Shin) - (Ankle + Heel)
		12 x Push-ups	Men: 42.8 kg; Women: 31.3 kg (50% body mass)	Men: 0.65 m; Women: 0.60 m; Distance = Arm - (Wrist + Hand)
		15 x Box jumps	Men: 85.6 kg; Women: 62.6 kg	Box Height (Men: 0.61 m; Women: 0.51 m)
11.3	5-minute AMRAP	1 x Squat clean	Men: 74.8 kg; Women: 49.9 kg	Men: 1.185 m; Women: 1.087 m; Distance = (Height) - (Head) - (Neck) - (Ankle + Heel) - (0.5 x Shin)
		1 x Jerk	Men: 74.8 kg; Women: 49.9 kg	Men: 0.709 m; Women: 0.654 m; Distance = Arm
11.4	10-minute AMRAP	60 x Bar-facing burpees	Men: 85.6 kg; Women: 62.6 kg	Men: 0.142 m; Women: 0.131 m; Distance = (Height) - (Head) - (Neck) + Standard Jump (0.762; 2.5 feet)
		30 x Overhead squats	Men: 54.4 kg; Women: 40.8 kg	Men: 0.510 m; Women: 0.466 m; Distance = Femur
		10 x Ring muscle-ups	Men: 85.6 kg; Women: 62.6 kg	Men: 0.142 m; Women: 0.131 m; Distance = Arm x 2
11.5	20-minute AMRAP	5 x Power cleans	Men: 65.8 kg; Women: 45.4 kg	Men: 1.185 m; Women: 1.087 m; Distance = (Height) - (Head) - (Neck) - (Ankle + Heel) - (0.5 x Shin)
		10 x Toes-to-bar	Men: 42.8 kg; Women: 31.3 kg (50% body mass)	Men: 2.122 m; Women: 1.958 m; Distance = (Height) - (Neck) + Arm
		15 x Wall ball shots	Men: 9.1 kg; Women: 6.4 kg	Men: 3.558 m; Women: 3.209 m; Distance = Femur + Target (Men: 3.048; Women: 2.743 m)
11.6	7-minute AMRAP	3 x Thrusters	Men: 45.4 kg; Women: 29.5 kg	Men: 1.219 m; Women: 1.121 m; Distance = Femur + Arm
		3 x Chest-to-bar pull-ups	Men: 85.6 kg; Women: 62.6 kg	Men: 0.828 m; Women: 0.765 m; Distance = Arm + (0.25 x Torso)
		*Add 3 repetitions after each completed set		

RESULTS

Figure 2. Prescription differences between Open workouts and programmed exercises.
Note: Unless otherwise stated, repeated measures analysis of variance and Bonferonni post-hoc analysis revealed significant ($p < 0.05$) differences between all sex, workout, and exercise pairwise comparisons.