

How Effective is the Total Gym ELEVATE Row?

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RESEARCH

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THE TOTAL GYM® FAMILY OF PRODUCTS IS

ubiquitous, as well known among insomniacs as it is among fitness enthusiasts. I guess that's what a late-night infomercial starring Chuck Norris and Christie Brinkley can do for a brand. Importantly, however, Total Gym sits at that rare confluence of popularity and effectiveness, so it's no surprise that the introduction of the Total Gym ELEVATE Row™ was met with enthusiasm.

The indoor rowing machine, a staple of fitness facilities around the world, provides a challenging workout, while sparing the joints the high-impact ground reaction forces associated with running and jogging. That said, what makes the ELEVATE Row different?

Like other Total Gym machines, the ELEVATE Row uses an adjustable incline to modify body-weight resistance, making it a user-friendly and versatile piece of equipment that differs substantially in function from traditional rowers. For example, according to the manufacturer, the ELEVATE Row:

- ▶ Features adjustable incline body resistance, integrating a strength component into a traditional cardio machine
- ▶ Enables a smooth consistent load through the entire range of motion due to concentric and eccentric phases of the exercise while providing low-impact compression on the joints, especially the lower spine



- ▶ Is built for multiplanar movement, including exercises such as biceps curls and an alternating side-to-side row

However, because of its novelty, there is a lack of research on the ELEVATE Row. Can it live up the legacy of the Total Gym name? ACE enlisted the help of Lance Dalleck, Ph.D., and his team of researchers in the High Altitude Exercise Physiology Program at Western State Colorado University to find out.

The purpose of this study was twofold. First, the researchers wanted to quantify the acute cardiovascular and metabolic responses to the ELEVATE Row. Second, they sought to determine the effectiveness of six weeks of chronic exercise training with the machine for improving cardiorespiratory and muscular fitness and positively modifying cardiometabolic risk factors.

Understanding the cardiovascular and metabolic responses to exercise is essential for designing safe and effective physical-activity and rehabilitation programs. For example, it would be beneficial to understand the metabolic equivalent (MET) value associated with the ELEVATE Row, as that would allow for the quantification of exercise intensity as low, moderate or vigorous in nature, and thereby aid in establishing a safe and effective target workload.

The Study

The research team recruited 16 healthy men and women with an average age of 28 years. All of the participants were low-to-moderate risk and considered physically active.

To quantify the acute cardiovascular and metabolic responses to training with the ELEVATE Row, each participant completed a single 30-minute training session as researchers monitored their cardiovascular and metabolic responses to the exercise.

The testing session was divided into six five-minute stages, during which the following rowing motions were performed: flat rowing, incline rowing, flat biceps curl rowing, incline biceps curl rowing, flat side-to-side rowing and incline side-to-side rowing. Electromyography (EMG) activity was obtained from eight lower-extremity muscles to quantify how hard the lower body was working during the ELEVATE Row workout.

To measure the chronic responses to training on the ELEVATE Row, the researchers conducted the following baseline measurements:

- ▶ Maximal heart rate
- ▶ Maximal oxygen uptake ($\dot{V}O_2\text{max}$)
- ▶ Resting heart rate
- ▶ Body composition
- ▶ Fasting blood lipids
- ▶ Fasting blood glucose
- ▶ Waist circumference
- ▶ Weight
- ▶ Muscular fitness [one-repetition maximum (1-RM) testing for the bench press, leg press, and seated row]

These same measurements were collected after the six-week program to determine its effectiveness at positively modifying cardiometabolic risk factors.

The program consisted of five 30-minute sessions per

week, for a total of 30 workouts (Figure 1). It's important to highlight the fact that these workouts combined cardiorespiratory and resistance training into each session. While the figure lists the workouts as occurring Monday through Friday, participants were told they could complete the workouts on any day they chose, but were encouraged to avoid working out more than three consecutive days without a rest day. All sessions were supervised by a member of the research team.

The Results

The acute cardiovascular and metabolic responses to a single ELEVATE Row exercise session are presented in Table 1, while Figure 2 illustrates the exercise intensity in terms of heart-rate reserve (HRR) for a representative participant throughout the session. The EMG values ranged from 23 to 81% of maximum voluntary contraction across the lower-body muscle groups.

Table 1
Acute Cardiovascular and Metabolic Responses

Parameter	mean \pm SD
HR (beats/min)	142.5 \pm 11.3
%HRR	63.4 \pm 13.9
% $\dot{V}O_2R$	48.8 \pm 14.2
METs	5.77 \pm 1.2
kcal/min	7.4 \pm 2.1
kcal/session	222.0 \pm 74.3

Note: HR = Heart rate; %HRR = Percentage heart-rate reserve; Kcal = Kilocalories; METs = Metabolic equivalents; % $\dot{V}O_2$ = Percentage oxygen uptake reserve.

The chronic cardiovascular and metabolic responses to exercise training with the ELEVATE Row are presented in Table 2. These data reveal favorable changes in weight, body-fat percentage, high-density lipoprotein (HDL) cholesterol, triglycerides, blood glucose and maximal oxygen uptake ($\dot{V}O_2\text{max}$). Collectively, this indicates that the six-week ELEVATE Row program elicited a positive effect on body mass, body composition and cardiovascular health. There also was a positive effect on muscular fitness, as significant increases were seen in the following 1-RM exercises: leg press, bench press and seated row. There were no significant changes from baseline in the participants' waist circumference, total cholesterol and low-density lipoprotein (LDL) cholesterol.

Figure 1
The Six-week Total Gym ELEVATE Row Exercise Training Program

Exercises	Week 1					Week 2					Week 3*				
	Mon	Tue	Wed	Thu	Fri	Mon	Tue	Wed	Thu	Fri	Mon	Tue	Wed	Thu	Fri
Under hand grip static row															
Single arm row (dynamic)															
Single arm row (static)															
Single arm row single leg															
single arm row with twist															
Bicep curl dynamic															
Bicep curl static															
Bicep curl single leg															
Core EX 1															
Core EX 2															
Core EX 3															
Over hand grip (low)															
Over hand grip (medium)															
Under hand grip low single leg															
Alternating row															
Over hand grip static EX1															
Over hand grip static EX2															
Front shoulder raise															
Front shoulder raise alternating															
Over hand grip high															
Over hand grip high single leg															
over hand grip upright row															

Exercises	Week 4*					Week 5**					Week 6**				
	Mon	Tue	Wed	Thu	Fri	Mon	Tue	Wed	Thu	Fri	Mon	Tue	Wed	Thu	Fri
Under hand grip static row															
Single arm row (dynamic)															
Single arm row (static)															
Single arm row single leg															
single arm row with twist															
Bicep curl dynamic															
Bicep curl static															
Bicep curl single leg															
Core EX 1															
Core EX 2															
Core EX 3															
Over hand grip (low)															
Over hand grip (medium)															
Under hand grip low single leg															
Alternating row															
Over hand grip static EX1															
Over hand grip static EX2															
Front shoulder raise															
Front shoulder raise alternating															
Over hand grip high															
Over hand grip high single leg															
over hand grip upright row															

* Addition of 1 resistance band (0-15lbs), ** Addition of 2 resistance band (15-30lbs), Week 1 = Low resistance (17% of bodyweight) (level 1 incline), Week 2-6 = High Resistance

Figure 2

Exercise intensity in terms of heart rate reserve (HRR) for a representative participant throughout the duration of a Total Gym ELEVATE Row exercise session. The dashed lines (-----) represent the vigorous exercise intensity classification.

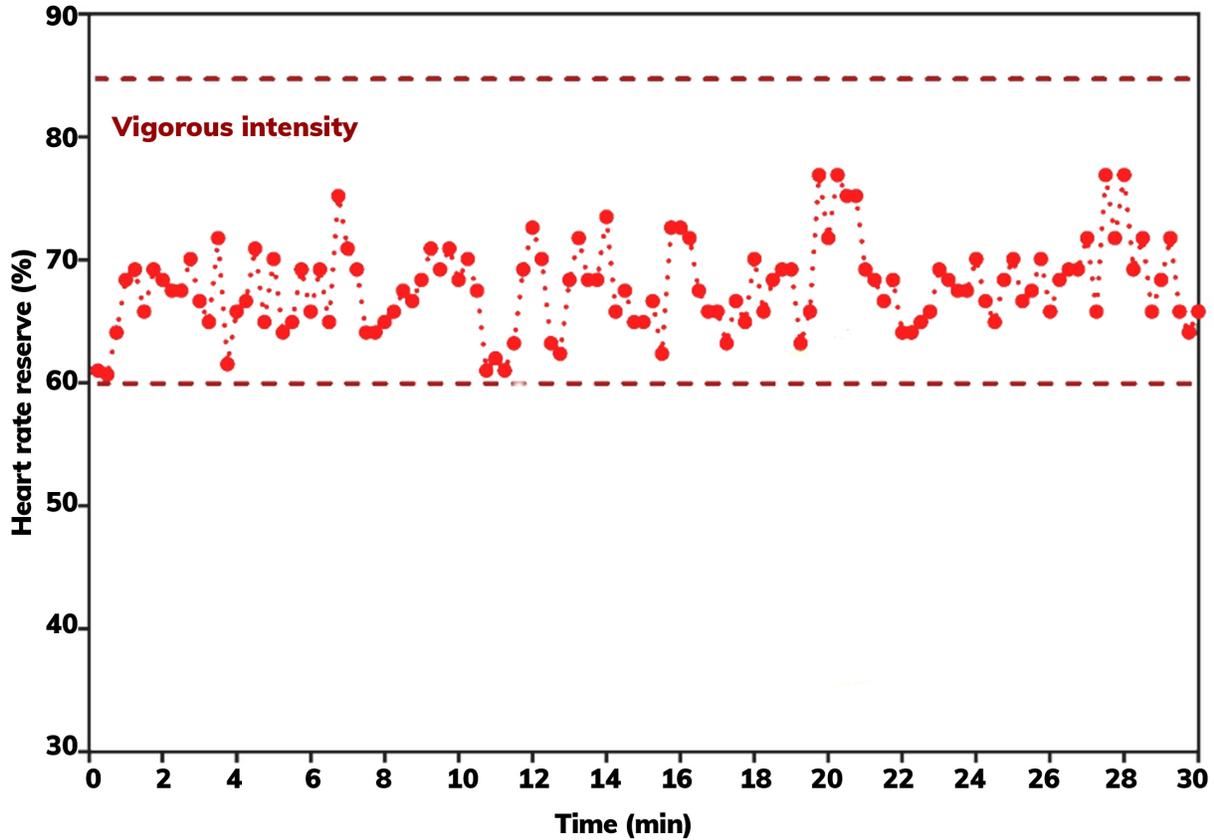


Table 2

Baseline (mean \pm SD) and Mean Change (95% CI) at Six Weeks in All Primary Outcomes After Exercise Training With the Total Gym ELEVATE Row

Variable	Baseline mean \pm SD	Change at 6-wk mean (95% CI)	p-value difference to baseline
Weight (kg)	73.3 \pm 17.5	-0.98 (-1.40 to -0.57)	<0.001*
Waist circumference (cm)	80.1 \pm 12.6	-0.48 (-1.23 to 0.28)	0.197
Body fat (%)	24.6 \pm 6.2	-2.03 (-2.72 to 1.34)	<0.001*
TC (mg/dL)	181.3 \pm 25.6	4.13 (11.94 to 20.20)	0.592
HDL (mg/dL)	52.9 \pm 14.4	5.44 (2.65 to 8.23)	0.001*
LDL (mg/dL)	104.9 \pm 32.4	-5.75 (-17.83 to -6.33)	0.326
TRIG (mg/dL)	126.6 \pm 62.3	-16.75 (-27.80 to -5.70)	0.006*
GLU (mg/dL)	92.9 \pm 7.5	-5.19 (-7.97 to -2.41)	0.001*
$\dot{V}O_2$ max (mL/kg/min)	37.7 \pm 5.8	3.38 (2.67 to 4.07)	<0.001*
1-RM Leg Press (lbs)	187.2 \pm 78.9	17.50 (9.60 to 25.40)	<0.001*
1-RM Bench Press (lbs)	118.8 \pm 55.6	11.25 (5.29 to 17.21)	0.001*
1-RM Seated Row (lbs)	58.9 \pm 24.0	8.13 (4.07 to 12.18)	0.001*

Note: CI = Confidence interval; TC = Total cholesterol; HDL = High-density lipoprotein; LDL = Low-density lipoprotein; TRIG = Triglycerides; GLU = Blood glucose; $\dot{V}O_2$ max = Maximal oxygen uptake; 1-RM = One-repetition maximum.

*denotes $p < 0.05$.

The Bottom Line

According to the research team, the results of this study provide two preliminary lines of evidence supporting the Total Gym ELEVATE Row as an ideal exercise modality.

First, the typical exercise session elicited cardiovascular and metabolic responses that fulfill exercise intensity guidelines for improving and maintaining cardiorespiratory fitness [American College of Sports Medicine (ACSM), 2018; American Council on Exercise (ACE), 2014]. Mean exercise intensity was 63.4% of heart-rate reserve, 48.8% of oxygen uptake reserve ($\dot{V}O_2R$) and 5.8 METs. Overall energy expenditure for a ELEVATE Row exercise session was 222 kcal.

Second, participation in a six-week exercise training program with the ELEVATE Row positively modified numerous major cardiovascular disease risk factors and improved muscular fitness. These findings suggest that the ELEVATE Row is an exercise modality that may simultaneously satisfy both aerobic and resistance training guidelines.

A Note About Intensity and Proper Progression

Exercise intensity is arguably the most critical component of an exercise program, as a failure to meet minimal threshold values may result in a lack of training effect, while too high of an intensity could leave to overtraining and negatively impact long-term adherence (Franklin, 2007). The results of this study indicate that exercise with the ELEVATE Row can be classified as moderate-to-vigorous (ACSM, 2018; ACE, 2014). The HRR achieved by participants (63.4%) falls into the vigorous category, while the $\dot{V}O_2R$ values (48.8%) indicate moderate intensity. MET values and calories burned also fell within the moderate-intensity range.

That said, Dr. Dalleck reports that the participants in this study found that exercising at this intensity five days per week was a bit too fatiguing and negatively impacted their enjoyment of the program. For this reason, Dalleck recommends that people complete the ELEVATE Row workout two or three days per week, in combination with other, less-intense modalities.

On the plus side, Dalleck highlights both the effectiveness and the efficiency of the ELEVATE Row workout. “The ELEVATE Row is a time-efficient way to address both cardiorespiratory fitness and muscular strength in a single 30-minute workout.” In our fast-

paced, results-oriented world, the importance of time-efficiency cannot be overstated.

Finally, Dalleck emphasizes the need to progress to this modality, as many exercisers, newcomers and seasoned pros alike, find rowing to be a tough exercise—and the ELEVATE Row is no different.

In Conclusion

To our knowledge, this is the first study to investigate the acute and chronic cardiovascular and metabolic responses to exercise with the Total Gym ELEVATE Row, and its use as a feasible alternative to traditional exercise modalities for adults that elicits metabolic responses within the accepted moderate-to-vigorous intensity range. In addition, regular exercise training with the ELEVATE Row improves muscular fitness and positively modifies several major cardiovascular disease risk factors in a time-efficient manner. Overall, these findings are important for exercise physiologists, health and exercise professionals, and others who design exercise programs and promote physical activity in the adult population. ▲

Daniel J. Green is an editorial consultant and freelance writer based in Asheville, N.C. In addition to his consulting work with organizations including the American Council on Exercise, International Association of Fire Fighters and Agriculture Future of America, Daniel writes an ongoing blog series covering lifestyle change for NBCbetter.com. He has also written feature articles for local publications in Western North Carolina (WNC), including WNC Parent and WNC Magazine.

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This ACE-sponsored study, “The Acute and Chronic Physiological Responses to Exercise with the Total Gym(R) Row Trainer™ in Adults,” was originally published in the peer-reviewed [*Journal of Exercise Physiology Online*](#).