Comparison of Alter-G and Land Treadmill Training

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ABSTRACT

Purpose: The Alter-G (AG) treadmill utilizes a lower-body inflation chamber to decrease impact while running. There is little research investigating long-term AG training effects, particularly compared to land treadmill (LT) training. **Methods:** Ten subjects (5 male, 5 female; 37 ± 12 yrs; 83 ± 29 kg) performed a Bruce treadmill protocol to determine VO_2max at the beginning and end of 12-weeks of AG training at 70% body weight. Subjects trained 3 days/week progressing from 60-85% VO_2max and from 250-500 kcal/session. DEXA body composition was also assessed. AG subjects were matched with 10 subjects (5 male, 5 female; 41 ± 11 yrs; 86 ± 18 kg) who previously completed the same training prescription for LT and underwent the same testing. For independent variables, the change (End - Beginning) was calculated for each group. Change data were analyzed using a 2 (group) x 1 (change) SAS mixed model ANOVA with a Tukey's post hoc test for group. The main effect for group was used to determine between group significance. Within group significance was determined using p-values for least square means estimates for each group's change scores. **Results:** See table.

	Body Mass (kg)	% Fat	Fat Mass (g)	Lean Mass (g)	FM Arms (g)	FM Trunk (g)	Bruce Time (min)	VO_2max (ml/min)	VO_2max (ml/kg/min)
AG (n=10)	0.8 ± 2.5	-0.9 ± 2.0	-330 ± 1842	1086 ± 1185**	27 ± 192	-409 ± 1247	0.55 ± 0.95**	160.5 ± 160.4**	2.2 ± 2.0**
LT (n=10)	-1.2 ± 2.3	-0.5 ± 1.3	-1069 ± 1626	-324 ± 1712	-139 ± 222**	-816 ± 1205**	1.58 ± 0.37**	272.2 ± 298.0**	3.7 ± 3.6**
Between p-value	0.087	0.593	0.354	0.046*	0.091	0.467	0.005*	0.310	0.281

Values mean change ± SD.
p-values in table for between group differences. *p < 0.05 between groups.
Within group significance indicated in group rows. **p < 0.05 within group.

Conclusions: AG training improved VO_2max but achieved lower gains in Bruce time. AG increased lean mass, while LT decreased region fat mass, consistent with the tendency towards slight body mass increases in AG and losses in LT. AG had a positive effect on fitness markers, but was less specific at improving run performance. Partial support: HydroWorx International, Inc. and AlterG, Inc.