Examination of Preference and Tolerance For Exercise Intensity and College Student Fitness

Blanca DeLaTorre

Recommended Citation

Examination of Preference and Tolerance For Exercise Intensity and College Student Fitness

Blanca P. DeLaTorre, Justin A. DeBlauw, MEd, Brittany S. Hollerbach MS, Sarah J. Cosgrove PhD & Katie M. Heinrich, PhD

Functional Intensity Training Laboratory, Department of Kinesiology, Kansas State University, Manhattan, KS
Contact: blanca3@ksu.edu

KANSAS STATE UNIVERSITY

College of Human Ecology
Department of Kinesiology

FUNCTIONAL INTENSITY TRAINING LAB

Abstract

Individuals who prefer and tolerate higher intensity exercise demonstrate higher fitness levels over time. **PURPOSE:** To examine relationships between Preference (P) and Tolerance (T) for exercise intensity and fitness before and after 8-week college activity courses. **METHODS:** Participants were students in 8-week high-intensity functional training (HIFT; n=54, 54% male, age= 22±3 years) or traditional weight training (TWT; n=41, 71% male, age= 23±4 years). During the first and last class sessions, participants completed the 16-item Preference for and Tolerance of the Intensity of Exercise Questionnaire [score range=8 (low)-40 (high)]. After a standardized warm-up, they completed vertical jump, hand grip, 2-min push-ups and 1-min squat tests. Using SPSS 25, bivariate correlations between P, T, and fitness tests were analyzed. **RESULTS:** Baseline P (HIFT= 28.1±5.3, TWT= 26.1±5.7) and T (HIFT= 26.3±4.7, TWT= 27.3±4.9) were similar between groups. HIFT P and T were significantly correlated at baseline with push-ups (r=0.39, p=0.004; r=0.32, p=0.019) and squats (r=0.30, p=0.032; r=0.39, p=0.004), respectively. TWT P was significantly correlated with baseline hand grip (r=0.59, p<0.001), and T with baseline vertical jump (r=0.52, p=0.001) and squats (r=0.49, p=0.003). HIFT T remained significantly correlated at posttest with push-ups (r=0.30, p=0.04) and squats (r=0.36, p=0.015). TWT P remained significantly correlated with posttest hand grip (r=0.48, p=0.003) and T with squats (r=0.40, p=0.019), but also with push-ups (r=0.45, p=0.009). **CONCLUSIONS:** P and T were positively correlated with fitness variables, although relationships differed by group and assessment period. P and T may be useful for predicting fitness levels in college students.

Background

- College activity classes provide structured exercise opportunities for students and can improve their fitness.[1]
- Exercise intensities that fall within a preferred range may increase exercise adherence; tolerance allows an individual to continue working at a high exercise intensity, even if it becomes unpleasant.[2]
- Greater preference and tolerance for high intensity exercise has positively predicted higher fitness levels, but not fitness improvements.[2]

Hypothesis

Individuals who prefer and tolerate higher intensity exercise will demonstrate higher fitness levels over time.

Methods

Design

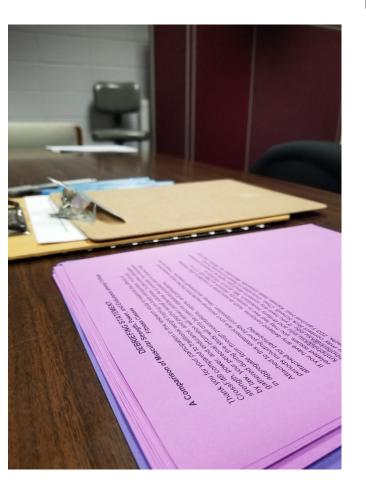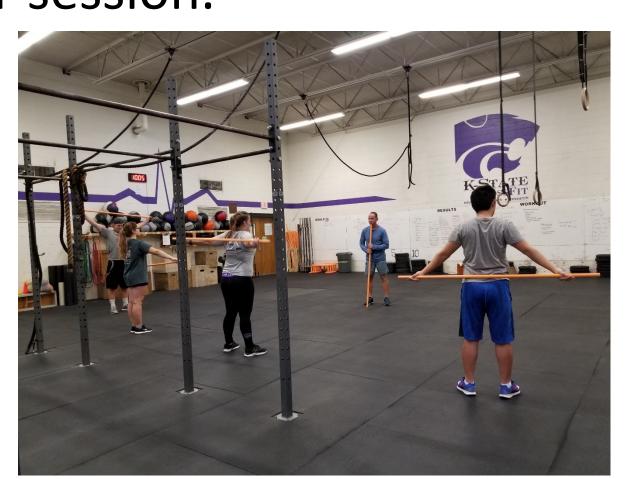- Pre-test, post-test two group design

Participants

- Participants were college students in 8-week high-intensity functional training (HIFT) or traditional weight training (TWT) courses.
- HIFT: n = 54 (54% male, age = 22 ± 3 years)
- TWT: n = 41 (71% male, age = 23 ± 4 years)

Methods

Measures

- At baseline, participants completed the 16-item Preference for and Tolerance of the Intensity of Exercise Questionnaire [3] [score range = 8 (low) - 40 (high)].
- After a standardized warm-up, participants completed fitness measures to evaluate **power** (vertical jump in cm), **strength** (hand grip in kg), and **endurance/stamina** (2 min push-ups and 1 min squat tests for repetitions).
- HIFT group performed two training sessions a week for 75-minutes per session.
- TWT group performed two training sessions a week for 60-minutes per session.

Results

- As shown in Table 1, Preference and Tolerance were similar between groups at baseline.

Table 1. Preference and Tolerance scores by group at baseline

	HIFT		TWT	
	M (SD)	Range	M (SD)	Range
Preference	28.1 (5.3)	15-39	26.1 (5.7)	17-36
Tolerance	26.3 (4.7)	14-36	27.3 (4.9)	16-38

Funding Acknowledgement

Results

- As shown in Tables 2 and 3, greater Preference and Tolerance was significantly correlated with higher fitness scores for some, but not all fitness tests for each group at baseline and posttest.

Table 2. Baseline fitness scores and correlations with Preference and Tolerance by group

Fitness Test	HIFT			TWT		
	M (SD)	Preference	Tolerance	M (SD)	Preference	Tolerance
Vertical Jump (cm)	48.3 (12.2)	0.06	0.27	48.9 (12.9)	0.22	0.52**
Hand-grip (kg)	39.5 (10.8)	-0.03	0.22	40.3 (10.1)	0.59**	0.30
Push-ups (reps)	30.1 (13.3)	0.39*	0.32*	25.3 (11.4)	0.08	0.33
Squats (reps)	40.6 (9.9)	0.30*	0.39**	40.0 (7.7)	0.16	0.49**

*p < 0.05, **p < 0.01

Table 3. Posttest fitness scores and correlations with baseline Preference and Tolerance by group

Fitness Test	HIFT			TWT		
	M (SD)	Preference	Tolerance	M (SD)	Preference	Tolerance
Vertical Jump (cm)	50.3 (12.5)	0.08	0.24	50.8 (10.7)	0.24	0.33
Hand-grip (kg)	40.7 (10.4)	-0.10	0.15	40.8 (10.1)	0.48**	0.32
Push-ups (reps)	32.6 (13.1)	0.28	0.30*	31.1 (10.8)	0.17	0.45**
Squats (reps)	45.5 (7.5)	0.24	0.36*	43.5 (8.2)	0.13	0.40*

*p < 0.05, **p < 0.01

- No fitness change scores were significantly correlated with baseline Preference or Tolerance for either group.

Conclusions

Preference and Tolerance were positively correlated with fitness variables for each group, although those relationships differed by group and assessment period. Preference and Tolerance may be useful for predicting fitness levels in college students. Future research might examine whether Preference and Tolerance help predict differential drop-out from higher-intensity activity courses.

References.

1. Danoff, J. V., & Raupers, E. G. (2014). Effect of a one-semester conditioning class on physiological characteristics of college students. *The Journal of Strength & Conditioning Research*, 28(11), 3115-3120.
2. Hall, E. E., Petruzzello, S. J., Ekkekakis, P., Miller, P. C., & Bixby, W. R. (2014). Role of Self-Reported Individual Differences in Preference for and Tolerance of Exercise Intensity in Fitness Testing Performance. *Journal of Strength and Conditioning Research*, 28(9), 2443-2451
3. Ekkekakis P., Hall E., & Petruzzello S. (2005). Some like it vigorous: Measuring individual differences in the preference for and tolerance of exercise intensity. *Journal of Sport and Exercise Psychology*, 27(3), 350–374.