Efficacy of a Motivational Video on Heart Rate, RPE, and Total Work Performed During Stationary Cycling

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Purpose

- The purpose of this study was to compare the effects of watching a motivational video (Tour de France (MV)) versus a calming video (Bob Ross painting (PV)) while cycling.

Background Information

- Physical activity
  - primary recommendations in prevention against CVD, obesity, and premature death (5)
  - ACSM PA recommendations to maintain a healthy lifestyle (6)
  - Participation rates declining last 50 years (1)

Background Information

- Decline due to (2):
  - Lack of motivation/boredom during PA
  - Time
  - Financial cost
  - Pain
  - How to start

Background Information

- Studies to boost PA participation (2,3,4,7-15):
  - Preferred exercising with both or at least one stimulus (audio or visual) compared to none at all
  - Cycling versus running
  - RPE

Background Information

- Increased video-based technology → reevaluate
- Psychophysiological Effect of Peer Motivation (3,4)
- Easily accessible for all populations

Hypothesis

- It was hypothesized that the motivational test would have increased exercise heart rates, total mileage, and lower ratings of perceived exertion compared to the same exercise test during the non-motivational video.

Participants

- Four males and six females
  - Ages 18-50
  - University of Lynchburg population
  - No varsity athletes
  - Recreationally active
  - Auditory and visual capabilities

Research Design

- Randomized within-subjects design
- Independent variable:
  - type of video
- Dependent variables:
  - Heart Rate
  - RPE
  - Total Mileage

Methods - Session 1

- Informed Consent & PAR-Q
- Familiarization Period:
  - Borg Scale
  - Intensities during test
- Measurements:
  - Age
  - Sex
  - Ht
  - Wt
  - % BF

Methods - Exercise Test PV

- Non-Motivational Video
  - Warm-up 2 min defined intensity RPE 10
  - Cycle at moderate intensity for 20 min while watching Bob Ross Mystic Mountains
  - Cool-down 2 min at light intensity
  - HR & RPE recorded at:
    - Minute 1 of warm-up
    - Minutes 5, 10, 15, 20
    - Minute 1 of cool-down
  - Distance cycled recorded at completion of 2 min cool-down

Methods - Exercise test MV

- Motivational Video
  - Same procedure
  - Tour de France 2018-Best Moments

Instrumentation

Rating	Descriptor
6	No exertion at all
7	Extremely light
8	
9	Very light
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard (heavy)
16	
17	Very Hard
18	
19	Extremely hard

YouTube Premium

Instrumentation

Statistical Analysis

- SPSS (IBM Technologies, version 26, Armonk, NY)
- Paired Samples t-test
- 2x6 Factorial ANOVA
- Demographics

Table 1 Subject demographics (n = 10)

Variables		*n*	*%*	*Cumulative %*
Sex				
	Male	4	40	40
	Female	6	60	100
		M	*SD*	*Range*
Age (yrs)		21.5	0.7	21 – 23
Height (m)		1.756	0.076	1.65 – 1.94
Body mass (kg)		76.24	11.92	61.3 – 95.4
Body fat (%)		22.31	6.28	8.0 – 29.8

Table 2 Paired sample *t*-test results for heart rate averaged across exercise, RPE averaged across exercise and distance covered

	Non-motivational video		Motivational video			
	M	SD	M	SD	t	Sig. (two-tailed)
RPE averaged across exercise	12.25	1.28	12.85	0.69	1.38	0.200
HR averaged across exercise	126.78	18.10	137.75	15.67	1.79	0.106
Distance (miles)	6.95	1.06	8.01	0.9	-3.86	0.004*

*$p<0.05$

Table 3: 2 x 6 Factorial ANOVA for heart rate (HR) and rating of perceived exertion (RPE) across time

		Non-motivational video		Motivational video				
		M	SD	M	SD	F	Sig.	partial η2
HR (bpm)						31.39	0.000*	0.77
	Pre	107.1	19.2	102.3	23.2			
	5 min	117.2	20.8	126.0	18.2			
	10 min^Ŧ	125.7	21.5	133.4	18.8			
	15 min^Ŧ	130.1	17.1	141.9	15.7			
	20 min^Ŧκ	134.1	14.8	149.7	12.1			
	Post^ι	119.1	19.9	131.7	17.2			
RPE						35.19	0.000*	0.80
	Pre	9.1	1.4	8.9	0.7			
	5 min^	11.2	0.9	11.6	0.9			
	10 min^	12.2	1.2	13.0	0.7			
	15 min^	12.6	2.0	13.6	1.1			
	20 min^Ŧ	13.0	1.8	13.8	1.1			
	Postκι	9.7	1.6	10.2	1.6			

* $p<0.05$, ^ sig. different than pre, Ŧsig. different than 5 min, κsig. different than 10 min, ιsig. different than 20 min

Analysis

- Visual stimuli studies⟶ mileage significantly increased in cycling or running tests from control to visual stimuli (3, 8, 11)
- Current study⟶ mileage significantly increased from PV to MV

Controlled Factors

- Covering dashboard
- Noise-cancelling headphones
- Youtube Premium

Limitations

- Sleeping habits
- Caffeine intake
- Medication
- Screen viewing

Recommendations

- Larger population size
- Diversity in ages
- Video Activity
- Special Populations

Final Thoughts

- Purpose
- Results
- Motivational videos enhance subjects' performances with less perceived effort

Application

- Results from this study:
  - Increase exercise volume for a general population
  - Benefit individuals seeking to implement PA who lack motivation
  - Contribute knowledge to the exercise physiology community

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