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

<table>
<thead>
<tr>
<th>Rating</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>No exertion at all</td>
</tr>
<tr>
<td>7</td>
<td>Extremely light</td>
</tr>
<tr>
<td>8</td>
<td>Very light</td>
</tr>
<tr>
<td>9</td>
<td>Light</td>
</tr>
<tr>
<td>10</td>
<td>Somewhat hard</td>
</tr>
<tr>
<td>11</td>
<td>Hard (heavy)</td>
</tr>
<tr>
<td>12</td>
<td>Very Hard</td>
</tr>
<tr>
<td>13</td>
<td>Extremely hard</td>
</tr>
</tbody>
</table>

![YouTube Premium](https://i.imgur.com/3Q5Q5Q.png)
Instrumentation
Statistical Analysis

- SPSS (IBM Technologies, version 26, Armonk, NY)
- Paired Samples t-test
- 2x6 Factorial ANOVA
- Demographics
### Table 1 Subject demographics (n = 10)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td><strong>M</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>21.5</td>
<td>0.7</td>
<td>21 – 23</td>
</tr>
<tr>
<td>Height (m)</td>
<td>1.756</td>
<td>0.076</td>
<td>1.65 – 1.94</td>
</tr>
<tr>
<td>Body mass (kg)</td>
<td>76.24</td>
<td>11.92</td>
<td>61.3 – 95.4</td>
</tr>
<tr>
<td>Body fat (%)</td>
<td>22.31</td>
<td>6.28</td>
<td>8.0 – 29.8</td>
</tr>
</tbody>
</table>
Table 2 Paired sample $t$-test results for heart rate averaged across exercise, RPE averaged across exercise and distance covered

<table>
<thead>
<tr>
<th></th>
<th>Non-motivational video</th>
<th>Motivational video</th>
<th>t</th>
<th>Sig. (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPE averaged across exercise</td>
<td>12.25 1.28</td>
<td>12.85 0.69</td>
<td>1.38</td>
<td>0.200</td>
</tr>
<tr>
<td>HR averaged across exercise</td>
<td>126.78 18.10</td>
<td>137.75 15.67</td>
<td>1.79</td>
<td>0.106</td>
</tr>
<tr>
<td>Distance (miles)</td>
<td>6.95 1.06</td>
<td>8.01 0.9</td>
<td>-3.86</td>
<td>0.004*</td>
</tr>
</tbody>
</table>

*p<0.05
<table>
<thead>
<tr>
<th></th>
<th>Non-motivational video</th>
<th>Motivational video</th>
<th>F</th>
<th>Sig.</th>
<th>partial η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR (bpm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>107.1</td>
<td>102.3</td>
<td>31.39</td>
<td>0.000*</td>
<td>0.77</td>
</tr>
<tr>
<td>5 min</td>
<td>117.2</td>
<td>126.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 min^F</td>
<td>125.7</td>
<td>133.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 min^F</td>
<td>130.1</td>
<td>141.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 min^F&gt;tx</td>
<td>134.1</td>
<td>149.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post^t</td>
<td>119.1</td>
<td>131.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RPE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>9.1</td>
<td>8.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 min^</td>
<td>11.2</td>
<td>11.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 min^</td>
<td>12.2</td>
<td>13.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 min^</td>
<td>12.6</td>
<td>13.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 min^F&gt;tx</td>
<td>13.0</td>
<td>13.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post^t</td>
<td>9.7</td>
<td>10.2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p<0.05, ^ sig. different than pre, Tx sig. different than 5 min, xsig. different than 10 min, usig. different than 20 min
Analysis

- Visual stimuli studies $\rightarrow$ mileage significantly increased in cycling or running tests from control to visual stimuli (3, 8, 11)
- Current study $\rightarrow$ 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
References


2. Casilio KM. Effects of watching television while exercising. The College at Brockport; State University of New York. Psychology Master’s Theses. 2012.


13. Lind E. The role of an audio-visual attentional stimulus in influencing affective responses during graded cycling exercise. Iowa State University, Digital Repository; Graduate Theses and Dissertations. 2008.
