An Analysis of Perception vs. Reality in Physical Fitness and the Effect of Fitness Testing on Physical Activity in College Students

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INTRODUCTION

- Physical fitness is important to overall health and each fitness component has certain health implications. Fitness assessments are used to predict health implications.
- College students with lower physical activity levels have higher rates of obesity and negative health outcomes [1]
- Most colleges students do not meet recommendations for physical activity despite knowing the benefits [5]

OBJECTIVES

- Assess the degree that perceptions of fitness are associated with measured fitness (1)
- To find out if and how intentions and behaviors change over time after receiving the results of a standardized fitness assessment. (2)

HYPOTHESES

1. Perceptions of fitness would differ from measured fitness levels in college students
2. Intentions would be sustained over time following the fitness test

METHODS

- 14 male and 14 female Undergraduate students, median age 21.75

Question 1: Cross-sectional study

- Administered Perceptions survey prior to intervention to determine how participants expected to perform on fitness assessment compared to their actual performance on test
- Analyzed using weighted kappa tests

Question 2: Quasi-experimental research question

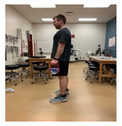
- Accelerometers worn for one week following intervention and approximately 4 weeks later.
- Administered Intentions Survey questions prior to intervention and following each accelerometer wear time.
- Analyzed intentions levels and physical activity from accelerometers using Wilcoxon matched pairs signed rank tests

Intervention: Fitness assessment using Fitness Assessment Measures (see below) and receiving results from fitness assessment

Fitness Assessment Measures

DXA Scan

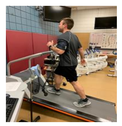
Hand Grip Dynometer Test



Sit-and-Reach Test

Push-up Test

Bruce Protocol Treadmill Test



RESULTS

Table 1. Fitness Perceptions vs. Actual Performance on Fitness Assessment

Example: "Compared to others of the same age and gender, how would you classify your muscular strength?"

Measure	Percent Agreement	Agreement (weighted kappa (SE), p-value)
Body Composition	78.6%	0.37 (0.11), <.001
Muscular Strength	75.9%	0.19 (0.11), 0.04
Muscular Endurance	71.4%	0.33 (0.10), <.001
Flexibility	72.3%	0.25 (0.11), 0.01
VO2 Max	84.8%	0.39 (0.12), p<.001

Table 2. Intentions to Change Physical Activity Question Results

Example: "Please indicate how ready you are to make changes or improvements in your health in the following areas: Be physically active"

	Time 1 (n=27)	Time 2 (n=27)	Time 3 (n=17)	1 vs 2	2 vs 3
I am not interested in making changes or improvements	0 (0%)	0 (0%)	1 (5.9%)	<.001	0.18
I have considered making healthier choices	2 (7.4%)	2 (7.4%)	1 (5.9%)		
I am ready to make a change	3 (11.1%)	3 (11.1%)	0 (0%)		
I have started making healthier choices	13 (48.2%)	14 (52.9%)	8 (47.1%)		
I make healthy choices on a regular basis	9 (33.3%)	8 (29.6%)	7 (41.2%)		

Table 3. Physical Activity from Accelerometer Wear Times, mean (SD)

	Time 2	Time 3	P-value
CPM	2,240 (1235.5)	1,998.0 (123.5)	0.94
Steps	10.796.2 (1048.8)	10,989.0 (900.5)	0.46

Summary of Results:

- There was Fair or lower agreement between perceived and measured fitness components when analyzed using weighted kappa tests (Table 1)
- Changes in intentions were observed between time 1 and 2 but no significant changes in intentions occurred between time 2 and 3 (Table 2)
- There was no significant change in responses when asked about intentions to make behavior changes between time 2 and 3, and no significant change in perceived physical activity levels between time 2 and 3
- There was no significant change in counts per minute or average steps per day between time 2 and time 3 (Table 3)

DISCUSSION/CONCLUSION

- Fitness testing is needed to educate a person on their physical fitness (1)
- Fitness testing interventions are effective at changing intentions but do not necessarily lead to behavior changes (2)
- Analysis of perceptions vs reality was similar to findings in other studies with like comparisons [2,3]
- Literature suggested that intentions are the main determinate of behavior change, but this study did not support this view [4]
- Advantages included an equal female to male ratio, a small age range and accuracy of fitness results due to quality of fitness tests
- Limitations included lack of control over accelerometer wear time, participant bias on surveys and inability to complete follow ups due to COVID-19 school closure
- Future studies might assess ways to influence behavior changes and might use a larger sample to get a more accurate analysis

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