Oregon State University College of Public Health and Human Sciences

Psychological Determinants of Physical Activity

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Background

The transition from high school (HS) to college can prove to be a difficult one for many HS students. In becoming acclimated within the academic and social realm of a college experience the individual is offered an opportunity to develop many lifestyle habits such as diet, sleep and most notably physical activity (PA) [1]. Most attention addressing health concerns is placed on health indicators attuned to the college environment. However valid, such reasoning overlooks that in 2007 only 18% of 9-12th graders met the 60-minute recommendation for PA[2]. It also looks over the reality that sedentary behavior increases with the age of the adolescent [3]. Youth athletes provide a unique opportunity in developing healthy eating habits and sustainable levels of PA, since they are often predisposed to unhealthier eating habits in HS due to their high levels of PA. As a result, a youth athlete may experience new health challenges when entering college as a traditional student, where structured PA is no longer a part of their daily life.

Objective

The overall goal of The WAVE Project is to prevent unhealthy weight gain among active youth by maintaining active and healthy lifestyles through experiential learning of knowledge and life-skills in PA, nutrition, and Family and Consumer Sciences (PAN-FCS). This poster presents a 7-day study to evaluate the impact of HS soccer players' (14-19y) motivation on reward systems designed to increase/maintain PA, while evaluating other health indicators including mean sleep, PA, inactivity (IA) and steps per day.

Method

At the beginning of the research, participants were 16 female and 10 male youth soccer players (M_{age} = 15, SD = .67) from a HS in Corvallis. The participants were randomized into two groups; 13 (3M, 10F) in the performance contingent group (PCG) and the other 13 (7M, 6F) in a task contingent group (TCG). Of the 26 participants, 9 participants completed the study (PCG = 6, TCG = 3), and 4 completed an online self-administered Athletic Motivation Survey (AMS).

Both the TCG and PCG participants were rewarded points for levels of PA. Participants in both intervention groups were also required to participate in PA for 4 out of the 7-day study in order to complete the study. Different forms of PA included sport practice, weight lifting, walking, bicycling, and etc. The TCG and PCG participants were also required to log in their hours of

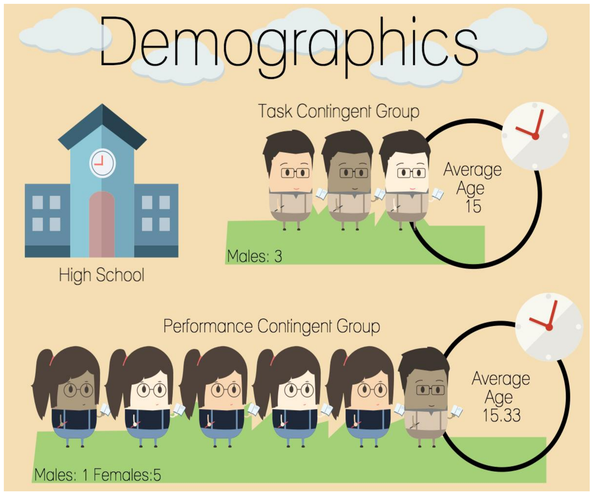

Figure 1. Participant demographic including age, sex and treatment

sleep, hours of IA and the specific time they engaged in PA for at least four days of the study. The amount of points rewarded for PA were associated to Rippleville, an online interactive 3D immersive virtual learning environment that the participants had been exposed to earlier in the larger study.

The **PCG reward system** followed a pyramid structure, with each level of the reward system corresponding to a point value and PA duration. In descending order from highest value:

- *Champion level:* 4,065 – 5,000 points,
- *Contender* level: 2,815 – 3,750 points
- *Rookie level:* 1,260 – 2,505 points

In order to attain a given point range or level, the participant would have to engage in PA, and be rewarded based on PA duration. One-hour of PA was rewarded 1,250 points, 45 minutes was rewarded 625 points, and 30 minutes was rewarded 315 points. At the end of the week, points from 4 days of PA for the participants were then totaled to assess what level he or she had attained.

In the **TCG reward system** points were rewarded for engaging in a minimum of 30 minutes of PA. Each time a participant completed 30 minutes of PA he or she received 1,250 points, totaling 5,000 points at the end of 4 days. The TCG participant needed to meet these requirements in order to complete the study.

Participants' steps/day were measured through the use of Fitbit Zip, while PA, hours of sleep and hours of IA were measured through a subjective self-monitoring log. These materials and a study protocol were distributed by a trained personnel at the beginning of the study, and collected approximately 7 days thereafter. Participants were also given an instructional handout including how to and when to wear the Fitbit. The present study requested that the Fitbit be worn on the days the participant engaged in PA for points.

Figure 2. Comparison of health indicators between treatments

Result

Overall 35% (n=9) of available athletes completed the study. In the PCG (1M, 5F) for 4 days 67% of participants recorded total hours of PA, 89% recorded total hours of sleep, and 50% recorded total hours of IA. On average, the PCG engaged in 2.3 hrs/day of PA, 7.8 hrs/night of sleep, and had 7.2 hrs/day of IA. In the TCG (3M) for 4 days all participants recorded total PA, sleep and IA. In a 4-day average, the TCG engaged in 2 hrs/day of PA, 7.6 hrs/night of sleep, and had 8.6 hrs/day of IA.

Overall 44% (n=4) of all participants completed the AMS. In the PCG 83% (n=5) of participants used a Fitbit device for at least 4 days, and averaged 8,687 steps/day. In the TCG 67% (n=2) of participants used a Fitbit device for at least 4 days, and averaged 8,997 steps per day. On average the PCG earned 4,479 points in 4 days in comparison to the TCG, which earned 4,375 points in 4 days.

Discussion

The PCG recorded more hours of PA and less hours of IA in 4 days than the TCG. However, the TCG recorded more steps/day than the PCG. One explanation for the difference in PA and Fitbit steps can be explained by the multiple sports many of the participants were involved in at the time of the study. Some participants could increase the time they engaged in PA, and therefore their steps, by simply participating in practice for their respective sport. Conversely, some participants lost time in both, as defined by this study, in being required to remove their Fitbit during a game. Qualitatively there seemed to be confusion by all participants as to what classified as IA. *Walking to class* was mistakenly thought of as IA when the study was looking for time spent on activities such as watching television. This occurrence may have diluted the results.

Among the 2 of the 4 participants who completed the AMS, 1 participant was from each treatment group. Both participants scored high in direct and indirect measures of intrinsic motivation. Both also scored high on indirect measures of extrinsic motivation. With such a small sample size it is difficult to tell how the participants motivation impacted their PA, sleep and IA. However in context to both participants, it seems that using social cues such as public or team recognition, may be able to supplement an athletes established intrinsic motives.

Conclusion

Based on this research, the PCG achieved better results than the TCG on all health indicators measured in this study. However, measuring these differences suffered incongruence in how IA was defined, and generally were not significant enough to establish a concrete difference between both reward systems. Secondly, the AMS showed an unsuspecting emphasis on extrinsic motivation, but this result too was not significant due to the small sample size. Therefore, several steps to take in order to improve this study include providing a better definition of IA to participants, implementing a longer study duration, and evaluating a larger study population. These adjustments in turn may help develop better results in future studies.

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