© *Media Watch* 7 (3) 299-314, 2016
ISSN 0976-0911 e-ISSN 2249-8818
DOI: 10.15655/mw/2016/v7i3/48557

Motivation toward Physical Activity: Effect of Social Media Community on Exercise Adherence

JUSTIN BARNES[1], YONG-CHAE RHEE[2] & REBECCA J. TALLENT[3]
[1,3]University of Idaho, USA
[2]Washington State University, USA

The purpose of this study was to provide information regarding a venue for exercise adherence motivation toward physical activity via social media support. The five themes identified that positively affected participants' intrinsic and extrinsic motivation to adhere to exercise through a social media fitness application were: accountability matters; support is crucial for a sedentary population beginning exercise; recognition of gains positively affects motivation; social media creates positive fitness competition; and fitness is a lifestyle.

Keywords: Social media, adherence, motivation, exercise

Several benefits are associated with exercise; but, motivating sedentary individuals to undertake a consistent fitness regimen is often a challenging task. Research suggests that dropout levels are significant for novice participants (Dishman & Dunn 1988). Dishman and Dunn also claim that half of all novice participants who begin an exercise regimen are likely to quit within six months. In addition, accelerated growth in the accessibility to technology, home entertainment and poor diet options also have hindered individuals'motivation and ability to maintain a healthy lifestyle and consistent fitness plan (Teasdale, Hue, Marcotte, Berrigan, Simoneau, Dore, Marceau, Marceau & Tremblay, 2007).

The vast majority of college students currently fall in the Millennial generation, the 77 million Americans born into the technology era (Nielson, 2014), and as such have grown up with smart phones, apps and social media as part of their everyday existence. In 2015, The Pew Research Center (Smith, 2015) said 15 per cent of all adults – those between the ages of 18 and 29, are heavily dependent on their phones for Internet use. Nielson (2014) also said this generation uses their phones for everything *but* talking in order to communicate and stay current. In addition, the Pew report said 62 per cent of these users have used their smartphones in the past year to look up health care information (Smith, 2015). Smith (2015) also noted the younger adults were far more likely to use their phones to avoid boredom:

> Fully 93 per cent of 18-29 year old smartphone owners in the experience sampling study used their phone at least once to avoid being bored, with respondents in this age group reporting that they did so in average of 5.4 surveys over the one-week study period. Similarly, 47 per cent of young smart phone owners used their phone to avoid interacting with the people

Correspondence to: Dr. Rebecca J. Tallent, Associate Professor, School of Journalism and Mass Media, University of Idaho, 875 Perimeter Drive MS 3178, Moscow, ID 83844-3178, USA.
E-mail: rtallent@uidaho.edu

around them at least once during the study period, roughly three times the proportion of older smartphone owners who did so.

Ogden, Carroll, Kit and Flegal (2012) indicate that approximately 80 million U.S. adults and 12.5 million (16.9 per cent) children and adolescents are overweight or obese. According to Ogden, Carroll, Kit and Flegal, the percentage of young people who are overweight or obese has more than tripled since 1980 (Goodman, Gail & Huang, 2003). The research projects that by 2030, half of all adults (115 million) in the U.S. will be overweight or obese. Ogden and Caroll (2012) and Goodman, Gail, and Huang (2003) claim that obesity has reached epidemic proportions in all age groups within the U.S., and is a major risk factor for premature mortality and morbidity. The increased level of overweight individuals has caused health care providers to express frustration with a seeming inability to provide affective interventions to motivate patients to exercise (Turner, Salisbury & Shield, 2012). Numerous studies assert that a vast quantity of overweight individuals live a sedentary lifestyle and exhibit poor diet choices (Teasdale, et al., 2007; Pressler, Knebel, Esch, Kölbl, Esefeld, Scherr, Haller, Schmidt-Trucksass, Krcmar, Halle & Leimeister, 2010; Hsu, Buckworth, Focht & O'Connell, 2013). Further understanding of the factors for why this population chooses not to participate in physical activity is important.Health and fitness professionals are constantly examining methods to guide and motivate individuals toward a regular and balanced exercise and wellness lifestyle (Pollock, 1988).

In the past decade, as phones have evolved into computer/internet use, more physicians have begun using phone apps to help their patients with everything from cancer (Coughlin, Thind, Liu, Champagne & Massey, 2016) to bariatric surgery preparation (Connor, Brady, Tulloh & de Beaux, 2013); but primarily for weight loss (Pagoto, Schneider, Jojic & De Baisse, 2013). Where primary care physicians have limited time for weight loss assistance to their patients, by recommending mobile technology, physicians can better assist their patients with weight goals (Pagoto, et. al, 2013). As Pagoto, Schneider, Jojic and DeBeBassie (2013) explained: "Behavioral weight-loss strategies are reflected in evidence based lifestyle interventions, most notably the Diabetes Prevention Program (DPP), which have been shown to be effective for weight-loss and reduction of risk for cardio-vascular disease and diabetes." Anderson, Burford and Emmerton (2016) said there is a "paucity of research into consumer engagement with electronic self-monitoring" and recommended the use of health apps as a means of controlling health issues.

Empirical data asserts that a dramatic decline of vigorous physical activity occurs between adolescence and young adulthood (Veiga, Gómez-Martínez, Martínez-Gómez, Villagra, Calle & Marcos, 2009). The increased rate of individuals becoming overweight while attending college also has doubled in 10 years (Weinstock, 2010). Transition from high school tohigher education is often a major life stressor for many students; this period also is associated with a decrease in vigorous physical activity. College students are more likely to use irregular weight loss tactics when combating weight gain due to outside pressure (Economos, Hildebrandt & Hyatt, 2008; Gruber, 2008). Economos, Hildebrandt and Hyatt (2008) as well as Gruber (2008) posit that this stagein life is understandably important, because college represents an important phase where lifelong health habits are established. The 1995 U.S. National College Health Risk Behavior Survey revealed that only 37.6 per cent of college students engage in regular or vigorous physical activity (Douglas, Collins & Warren, 1997). Though the information is dated, the higher education environment could be an optimal place to share and emphasize methods for healthy lifestyles.

With the known facts supported by the data, the lack of attention to weight management guidelines (including weight management and regular physical activity) is not surprising. Additionally, significant quantities of sedentary college students do not care to commence in regular physical activity. The risk factors and habits affecting sedentary college students' physical inactivity demands further understanding so that treatment sessions can address such behaviors. The college campus provides increased accountability for personal choices, and also contains numerous components for distribution of health information and combined physical activity (Wharton, Adams & Hampl, 2008; Brunt, Rhee & Zhong, 2008). Consequently, more effort should be made to teach sedentary college students about the benefits of regular physical activity (Fountaine, Liguori, Arupendra & Schuna, 2011).

The Problem

Several side effects have been documented due to a lack of exercise (Turner, Salisbury & Shield, 2012). Nonetheless, there is a need for information regarding improving exercise adherence that leads to lifestyle change for sedentary participants. Exercise adherence is the ability to maintain physical activity involvement for an extended period of time, and a sedentary lifestyle is a critical yet manageable health problem currently transpiring on college campuses (Gruber, 2008). On average, 10 per cent of sedentary individuals will begin exercise programs each year (Toraman, 2005). Interestingly, the reasons sedentary participants exercise or engage in physical activity are usually linked to physical appearance, health benefits, stress and depression management, enjoyment, self-esteem and self-confidence, and social affiliations (Whitbourne, 2012). In addition, sedentary individuals often lack motivation and fitness support, which appears to have a correlation with exercise adherence (Economos, Hildebrandt & Hyatt, 2008).

Research also implies that sedentary individuals do not necessarily desire to adhere to a healthy diet and active lifestyle (Grave, Calugi, Centis, Ghoch & Marchesini, 2011; Fuglestad, Jeffery & Sherwood, 2012). Several factors listed in the research include: low motivation and self efficacy, negative learning history with exercise, lack of coping skills, aversion to environmental characteristics, high costs of training programs, low cultural support and time barriers. Fuglestad, Jeffery and Sherwood (2012) also claim that making the matter more challenging is that sedentary individuals are often comfortable with an inactive lifestyle, and are resistant to understanding the significance of changing. Making sedentary individuals move and improve adherence to exercise is a critical challenge due to decreased levels of motivation (Kilpatrick, Hebert & Bartholomew, 2005). For this to transpire, more evidence is needed to understand the psychological and motivational determinants of exercise behavior.

There are several theories for why participants choose not to pursue exercise. Often the feeling of not being able to perform to a certain level within a gym or fitness group may be a significant barrier that sedentary individuals encounter, especially college students who are deciding whether or not to exercise. Schlosberg (1995) tells a story about a 23-year-old Manhattan artist who experienced this feeling when she finally walked into a gym and almost turned around due to a feeling of not being able to compete with the tanned, perfect bodies in spandex catsuits. Stoll (2007) hypothesizes that peers often have the greatest influence on whether or not people choose to participate in physical activity. Stoll also suggests that peers can be a barrier to one's fitness choice due to a feeling of an inability to perform the activity at an adequate level.

Though peers can be a barrier to physical activity in specific situations, they can also be a positive motivator for holding one accountable if the sedentary individual chooses

to begin exercising (Casey, De Civita & Dasgupta; 2009). The choice to exercise has to come from the participant; however, what makes an individual return to exercise often is the accountability they might feel to their peer community (Stoll, 2007). Stoll suggests a major reason why college students choose to return to school after their freshmen year is because of the community they have cultivated at the institution. Perhaps a similar phenomenon occurs within student recreation centers, fitness classes, and other exercise groups.

Other common exercise adherence barriers are social support, resources and an effective exercise program (Weinstock, 2010). Additionally, health behavior change can be confrontational for sedentary individuals not participating in exercise or practicing a healthy diet. The need for social support programs, perhaps via social media networks and applications could assist the population with behavior change (Brunt, Rhee & Zhong, 2008). Conceivably, social media community support could be a catalyst to broadcast simple exercise adherence motivation behavior strategies for sedentary college students. With the known statistics and side effects of a sedentary lifestyle, several consumer electronic companies have introduced innovative options that link with social media applications to aid exercise adherence and combat the sedentary lifestyle. The objectives behind the social media applications are to make participants aware of movement, sleeping and diet activity, and also motivate exercise behavior change.

Before the research began, the researchers suspected that if the participants in this study were able to commit to an active routine, participation might become more desirable, and to the point where exercise might be considered a lifestyle practice. Previous research supports this notion among patients with Type 2 diabetes. Of the themes uncovered in Casey, De Civita and Dasgupta (2009) findings, one advanced that participants who saw health benefits from physical activity such as feeling lighter,more endurance and better conditioned, were more likely to make fitness part of their daily routine. In addition, self-awareness of the participants' improvement also made them more likely to continue with an exercise routine due to self-recognition.

The purpose of this study was two fold; one, to understand exercise adherence motivation within a sedentary collegiate population that includes overweight participants; and two, to explore the mediating effect of social media derived physical exercise equipment (e.g. Fitbit, Nike Fuelband, UP Band, etc.) on exercise adherence withina social media community. Specifically, digital fitness wristband companies have developed social media network applications that monitor movement, sleep activity, and diet. The companies have been marketing the products to a broad range of smartphone users, but specifically, to individuals looking to lose weight, boost physical activity and simply improve overall health.

The companies pushing the digital fitness bands craze claim the product and social media application will help individuals live a healthier lifestyle while also receiving support from online community members. Advocates of the social media application claim the devices are designed to make users and community members more mindful of personal and community activity levels, which could be crucial to improving fitness levels and exercise adherence (Donovan, 2014). The notion is that participants monitoring physical activity day-by-day and week-by-week will be motivated to increase movement and incorporate more exercise into their daily routine.

By equipping sedentary college participants with digital fitness equipmentwhich links with a social media network application, this study was designed to encourage motivation to adhere to physical activity and analyze themes that may improve physical and psychological health of sedentary participants. The current models of physical education and training sessions appear to be failing sedentary college students to engage

in habits that lead to healthy lifestyles. The researchers recognized that social media combined with digital fitness wristbands may result in higher percentage of sedentary college students attending regular exercise sessions and exhibiting healthy behavior. Additionally, this study provided an opportunity to examine if social media networks combined with digital fitness equipment had a positive mediating effect on exercise adherence motivation levels within a sedentary college student population.

Theoretical Framework

As awareness increases regarding the importance of physical activity due to social media communities, several theories have been proposed to understand the motivation for living a healthy lifestyle. One of the more common theories concerning exercise adherence, is the theory of Planned Behavior (Ajzen, 1985). The theory of Planned Behaviorhas been frequently used to predict exercise adherence behavior motivation (Blanchard, Courneya, Rodgers, Fraser, Murray, Daub & Black, 2003). The theory explains that an individual's perception of ability to perform a certain behavior also affects behavioral outcomes. For example, if people in one's life want an individual to exercise, the individual may wish to do what others desire. Therefore, the individual may have some norms to comply and be motivated by other's opinions. But the same individual must have the ability to control personal behaviors.

In the theory of Planned Behavior, individual behavior can be either intrinsically or extrinsically motivated (Vallerand, Pelletier, Blais, Briere, Senecal & Vallieres, 1992). In general, intrinsic motivation refers to engaging in activity purely for the pleasure and the satisfaction derived from doing the activity (Deci & Ryan, 1975). Intrinsic motivation also refers to activities that allow individuals to experience feelings of competence and self-determination. This may explain why some individuals become regular exercise participants, because there is common belief that the opportunity will provide a more desirable comprehensive experience. Additionally, Horyna and Bonds-Raacke (2012) describe intrinsic motivation within college students as the stimulating effect received from the pleasure and excitement transpiring while engaging in an experience. The research implies that intrinsic motivation can be associated with such concepts as fitness exploration, striving for exercise goals, and regular attendance at fitness classes. Additional research posits that intrinsically-motivated college students demonstrate an enhanced inner aspiration and inclination toward life-long health learning (Kavanaugh, 2009).

An advantage to this study is the inherent use of social media by the participants. In studies, this generation ranked "technology use" as the most important factor in their lives while the Baby Boom generation ranked "work ethic" first (Nielson, 2014). Cho, Park & Ordonez (2013) said it is Millennials dependence on social media which sets them apart in the workplace and in society as a whole. As Paulin, Ferguson, Jost and Fallu (2014) said, "Millennials are the first generation to completely adopt SM as their primary mode of acquiring and sharing information in an environment that favors highly autonomous and public behavior."

The prior research suggests that intrinsic motivation may be depicted in the motives of participants who are choosing to participate in exercise and grow from the experience (e.g., Hoyt & Brown, 2003; Kavanaugh, 2009). Additionally, other research suggests that intrinsic motivation can be further differentiated into three specific types, including intrinsic motivation to know, intrinsic motivation toward accomplishments, and intrinsic motivation to experience stimulation (Vallerand, et al., 1992).

Contrary to intrinsic motivation, extrinsic motivation pertains to behaviors that are engaged in doing an activity as a means to an end and not for one's own sake (Deci, 1975). When examining sedentary student motivation concerning choice to exercise, extrinsic factors could include appearance, status and social gratification (Pollock, 1988; Hossler, Schmit & Vesper, 1999).

Methods

To meet the research purpose, multiple focus group interviews were conducted for validity. The focus group interviews were generated from five groups within the 30 member social media community using the digital fitness wristbands. The questions investigated the influence the digital fitness wristband social media community had on motivation to adhere to regular exercise. With respect to focus group design, the researchers stressed factors such as group size, group homogeneity, and how participants would be selected. Fern (1982) suggests that groups of four members produce the greatest number of quality ideas; however, groups between six and twelve participants are adequate, while eight participants are ideal. The researchers used a moderator and two assistant moderators (for record-keeping purposes).

Participant Selection

Each spring semester, a Northwest U.S. university holds a three-month fitness challenge at the student recreation center for students desiring to incorporate fitness into their lifestyle routine. As part of the signup process, students submit paperwork, which explains previous exercise history, student recreation attendance, and desired fitness goals for the challenge. Students also have to state on the form whether their lifestyle is highly active, meaning they participate in movement activities for at least one hour, six days per week; active, meaning they participate in movement activities for at least one hour, four days per week; somewhat active, meaning, they participate in movement activities for at least one hour, two day per week; or sedentary, meaning they rarely participate in any planned movement activity. In addition, students are pre-tested and post-tested to assess fitness gains throughout the three-month fitness challenge.

At the beginning of the fitness challenge, the researchers identified students who claimed to live sedentary lifestyles on their forms, and had minimal to no student recreation experience. As part of the identification process, each participant was required to complete an International Physical Activity Questionnaire (IPAQ). Participants who scored in the low category were placed in the sedentary population as possible candidates for this study. Once placed in the sedentary population, the researchers also tested the participants' body fat composition andbody mass index. From the process, the researchers were able to classify a sedentary group of approximately 75 participants. From this population, the researchers sought 30 student volunteers to participate in a focus group study design using digital fitness wristbands that linked with a specific social media network application. Additionally, each participant was requested to join the same social media community for support and motivation. The 30 students were between the ages 19-24, and were divided into five focus groups of six. Each group contained at least two women and four men. Two groups contained three women and three men. At the conclusion of the fitness challenge, each focus group discussed a series of questions concerning the motives for exercise, healthy living, whether social media had an influence on adherence to exercise and if the digital fitness wristbands had a mediating affect on adherence to exercise progress.

Questions

Focus group questions were constructed a *priori* with the moderator authorized to probe for additional input (Elliot & Leung, 2005). Previous research posited that this method achieved success and was found to enhance the unique group interaction component of focus group research (Seal, Bogart & Ehrhardt, 1992). Focus group questions were developed over a period of several months through multiple informal interviews with active students, sedentary students and digital fitness band users. The questions were designed to:

(i) Identify speciûc factors that may affect students' adherence to exercise;
(ii) Determine if community support and competition via a social media community affect motivation to adhere to exercise; and
(iii) Determine if fitness gains affect motivation to adhere to exercise.

The initial questions were tested with a pilot focus group and were subsequently modified according to suggestions of the facilitators and participants involved. Pilot questions concerned topics such as desires to attend student recreation centers, important factors in choosing to begin exercise, the benefits of exercise, how the exercise community affected one's adherence to exercise, whether watching other participants experience fitness gains motivated one to exercise, and the importance of fitness in life. The revised questions were used consistently in each focus group and listening session. After completing the interviews, each focus group session was recorded and then transcribed after the discussion. Some of the pre-determined questions were:

Initial Interview

(i) Why do you desire to exercise?
(ii) Why are you choosing to start exercising through the fitness challenge format?
(iii) In the past, what prohibited you from exercise?
(iv) How did you feel from not conducting regular exercise in the past?

Midway Interview

(i) How would you describe your effort in the fitness challenge to this point?
(ii) What elements of the fitness challenge have assisted or hindered your motivation to exercise?
(iii) How have the digital fitness bands and social media community effected your exercise motivation?
(iv) What have you learned from the fitness challenge experience to this point?

After Fitness Challenge Interview

(i) How did social media community members influence your choice to exercise?
(ii) How did being able to monitor your daily exercise movement influence your adherence to exercise?
(iii) What have you learned from this social media exercise experience?
(iv) How did being able to monitor your community members daily exercise movement influence your adherence to exercise?

Procedure

Focus groups were conducted at a university in the Northwest region of the U.S. Focus groups were incorporated into the daily school schedule of college students and ranged from 45 minutes to two hours in length, depending on the time flexibility of the participants.

Prior to each focus group, moderators presented a brief overview of the purpose of the focus group, which was followed by a discussion about the voluntary nature of participation and the need for a signed informed consent form. Following signed informed consent, each focus group was conducted using the same instrumentation. The focus group discussions allowed participant to brainstorm factors that may have motivated them to participate in a regular exercise routine.

Coding Data

To enable coding and thematic analysis from the focus group data, each session was videotaped. Electronic and hard copy transcripts were created from the video and stripped of identifying information. The collected data was analyzed with Krueger's (1994) framework analysis. In addition, peer debriefing was conducted between researchers to clarify the emerging themes discovered through saturation. Due to the need to manage large quantities of qualitative data, Microsoft Excel was used for the purpose of organizing content analysis, and data was coded into emerging themes. Fleiss's Kappa was employed to ensure a minimum of 80 per cent agreement in coding across the three researchers responsible for coding themes. Because there was a natural classification of data, formal coding was not performed. Researcher one conducted the ûrst review and developed the themes based upon participant statements and assigned statements to themes. Researcher two and three independently completed the same process and validated the themes with an average agreement score of 84 per cent.

During the focus group interviews, analysis of the transcript data also were analyzed using a procedure for note based analysis. This technique requires that the co-moderators take notes during the focus group to capture nonverbal behavior of participants during the interview process. Meanwhile, the lead moderator listens for possible inconsistencies that may need to be probed for further comprehension. For each question asked, the lead moderator provided a summary of the answer to seek confirmation from the focus group participants. Immediately following the focus group, the moderator and co-moderator debriefed and noted additional hunches, interpretations and beliefs. The recordings of the focus groups were then transcribed verbatim.

Results

This study explored physical activity from focus group data concerning the affect that digital fitness wristbands had on exercise adherence and motivation toward healthy behaviors. Data was analyzed to determine if social media had a mediating affect on motivation to exercise among a sedentary student population. Activities via the social media application were separated into workout logs, total steps per day, the characteristics of participants' physical activity choices, the amount of time spent participating in a certain movement activity per day and the extent to which participants experienced social media support from the personal social media community.

The researchers hypothesized that participation in social media communities would increase exercise adherence motivation and the frequency of physical activity. In addition, participants would actively spread the benefits of social media networks and report significant social media support for movement from community members. In spite of the ability to unite large numbers of sedentary individuals, distribute novelties, and provide an environment for social support, research had not yet explored if social media networking communities could be a vehicle to generate exercise adherence motivation toward healthy behaviors in a sedentary college student population.

The study identified five categories/themes through saturation that positively affected participants' intrinsic and extrinsic motivation to adhere to exercise through usage of the digital fitness wristband and social media application. The five categories identified were: accountability matters; support is crucial for a sedentary population beginning exercise; recognition of positive gains affects motivation; social media creates positive fitness competition; and fitness is a lifestyle. Of the five themes, the researchers found answers from participants that supported the theoretical framework for exercise adherence. Additionally, the researchers were able to see a link between exercise adherence and tracking participants' progress through a social media application.

Theme One: Social Media Community Held Participants Accountable

Participants frequently claimed that accountability mattered within the exercise community. Exercising with partners is not an innovative notion; however, the social media community provided regular support to participants, which required them to be accountable for routine movement and exercise. Participants claimed that knowing another community member was expecting them to arrive for a walk, fitness class or swim kept them accountable. Multiple participants also mentioned that they experienced personal guilt when choosing not to exercise on certain days because they felt their actions may disappoint social media community members.

> I knew I was responsible for my own actions. If I was not getting a workout in, or not walking enough, I was not being responsible to the group. It was definitely important to be consistent. [Julie, 21]

> Once I got going in the fitness challenge, I really bought in to the process. I also thought it was important to hold my friends accountable. If I noticed that their activity levels were down, I had no problem shooting them a text to see if they wanted to go for a walk or hit the gym. [Adam, 23]

Theme Two: Social Media Community Provided Support

Similar to holding team members accountable, emotional support, encouragement and group acceptance motivated participants to adhere to exercise. Community support came in multiple forms, ranging from encouragement and acceptance via the social media application, text message and phone, as well as face-to-face support at the student recreation center or on campus. All forms appeared to influence participants' intrinsic motivation. Several participants also claimed that it was less daunting to begin the fitness challenge knowing that a community member would share and participate in the experience. Additionally, receiving and providing support also was beneficial to participants expanding personal routines to include group fitness classes, specialized workouts clubs, or working with a certified personal trainer individually or in a small group.

> One of the hardest barriers for me was my fear of the recreation center. I had never tried any of the machines or fitness classes. I was even uncomfortable about visiting the facility for the first time. Having team members visit the gym with me made me feel more comfortable. Partly because I knew that most, if not all of them had never really exercised either. Over time, their support made me feel very comfortable with regular exercise at the facility, and even by myself. [Allison, 19]

Theme Three: Recognition in Fitness Progress Matters

Numerous participants stated that recognizing community members and being recognized for physical gains was crucial toward building positive motivation for exercise adherence. Participants also expressed that achieving noticeable gains inspired them to raise their levels of fitness, and provide recognition for team members' gains via the social media network application.

> I was always trying to encourage others to move more or try a new exercise. The other great thing about the social media community was that it was so easy to send someone congratulations when they reached a new fitness milestone. [Kelsey, 22]

> I genuinely felt really good when someone noticed my progress. When others began noticing my improvement, I was motivated to continue with my exercise routine. In fact, the encouragement made me want to push harder. [Ben, 24]

Theme Four: Social media creates competition

Each participant claimed to find motivation from monitoring other community members' activity. Similar to theme one, participants felt a responsibility to move because of the progress of other teammates throughout the challenge. Often other community members' movement behavior motivated participants to increase movement in their daily routine. Some participants stated they were motivated to exercise due to other community members' gains and the fear of being surpassed. Nonetheless, the possibility of surpassing another team member's fitness output motivated several participants to train harder.

> If I did not feel like exercising on a certain day, I could always look at the social media application to find motivation. The last thing I wanted was to be passed by someone who did not regularly move as much as I did on a daily basis. [Judd, 21]

> I was always gunning for people who generally moved more than I did. I started finding ways in which I could move more throughout the course of my day. Honestly, one of the best parts of this process was the friendly rivalry I had going with David. [Connor, 22]

Theme Five: Fitness is a Lifestyle

According to several of the participants, they began noticing positive gains in their daily movement routine by incorporating the digital fitness wristband into their lifestyle. Some of the participants claimed that instead of driving to work, they chose to bike or walk when weather permitted. Numerous mentioned that daily movement activities such as taking stairs or walking laps became habitual after the first month. Additionally, participants continually mentioned the negative effects from not incorporating daily movement into their lifestyles as they progressed further in the fitness challenge. Participants claimed that the digital fitness bands and social media community made them aware of positive daily movement patterns they could add to their routine.

> Towards the end of the challenge, I began to view fitness as just part of the daily routine. I guess you could say fitness became like brushing my teeth. I just had to do it. [Shelby, 21]

> I was skeptical of the fitness challenge, but the social media application made me more aware of the movement I could bring into my life. I am to the point now, where I will avoid the elevator when I can. I never used to be like that, but I think there is something to be said for taking the stairs, or walking to the grocery store. [Elyse, 22]

Discussion

The results suggest that social media communities that link with digital fitness wristbands can contribute to movement awareness in one's daily routines. The results also suggest that participants were intrinsically and extrinsically motivated by the community to make changes inlifestyle choices to incorporate more exercise. Much of the participants' motivation derived from the capability to compare movement data and provide support and accountability within the online social media community. Additionally, several participants claimed that having the ability to monitor personal activity as well as other participants' activity levels provided motivation to exercise, increased accountability and led to personal lifestyle changes that integrated movement into daily routines.

Five Category Themes

Accountability matters

The participants repeatedly claimed that the social media community kept them on-track and accountable. "A huge segment of the population doesn't have the luxury of working out with a partner," says fitness and nutrition expert Alan Aragon, M.S., a *Men's Health* advisor. "Social networks that focus on fitness can link you up with a community of people who share your goals. It's like taking the perfect training partner and multiplying him by a thousand."

Several participants also suggested that without accountability, consistency in movement could not be achieved. Participants mentioned that the social application media helped community members establish a strong sense of self-control and personal accountability. Numerous participants claimed that they noticed when their movement activity levels were down. Often the lack of movement positively affected participant's motivation to increase activity and incorporate new exercise routines into their lifestyle because of self-accountability. Gomez and Capelao (2013) claim that a prime motivatorin exercise adherence is the social accountability a group engenders via a social network application. Kumar also claims that community members can be a powerful motivating force, especially when everyone can see how much (or little) a community member has completed in one day or week.

Social media support matters

The researchers identified that support, though similar to accountability is crucial for a sedentary population beginning exercise. A recent study from the University of Georgia suggests that individuals tend to mimic the exercise behavior of others (VanDellen, 2010).

Other studies explain that peers have a substantial affect on health and fitness choices (Kahn, Ramsey, Brownson& Health, 2002; Vrazel, Saunders & Wilcox, 2008; Gomez &Capelao, 2013). Each study concluded that community support and the motivation to exercise was contagious to the participants. The bottom line for the participants in the social media community was that the majority was serious about the support system the digital fitness wristband application provided. Several participants claimed they were able to foster friendship with other participants who were motivated to achieve personal fitness goals. Moreover, participants mentioned that they would often provide supportive messages to community members when they believed a community member's motivation was declining.

Recognition of gains affects motivation

Several participants discussed the positive sentiments they felt through self recognition and community member acknowledgment of personal fitness gains. Additionally, participants claimed fitness gains were crucial to their motivational behavior to adhere to exercise. Purewal (2013) claims that no matter what an individual's fitness objectives are, having others periodically evaluate progress and provide positive recognition is essential to making sure an individual is on track. Shephard also claims that recognition of others' fitness progress is imperative to what fitness activities areworking well, or perhaps what activities are not, or what possible changes are needed to boost performance. Several participants asserted that when community members provided an objective examination of their training, they felt motivated by that recognition.

Social media creates positive competition

Of the categories identified, the competition that was initiated from the digital wristband social media application may have been the most noteworthy motivating factor. It was not uncommon for participants to claim they found motivation to exercise by habitually monitoring other participants' movement activities throughout the day and week. In fact, several social media application companies have begun to notice the competitive trend, and are offering network applications geared toward exercise enthusiasts based on that appeal (Purewal, 2013). Purewal claims that some of the applications allow community members to compete directly with other fitness participants using "Segments," user-defined sections of running/cycling trails/walking routes/swimming lanes/etc. Once a segment is defined on social media network, all participants who pass through the route doing the same exercise have their stats automatically uploaded to the network server. Similar to the research findings in this study, Purewal asserts that the innovative social networks increase motivation because each segment has its own leader board, so participants can see where they rank. Interestingly, Purewal suggests that males are generally more competitive with exercise, while females are more collaborative. Nonetheless, the findings reinforce that competition was a significant motivating factor in the research findings, because the social networks permitted students to compete not only with their immediate social circle, but also with individual goal attainment.

Fitness is a lifestyle

According to Hawkins, Best and Coney (2004), lifestyle is how people choose to live their lives. Similarly, Lazer (1963) stated that lifestyle is a systematic concept representing the characteristics of the life pattern of a society or a community that are distinct compared to

the characteristics of any other society or community. It was noticeable from the participants that the fitness applications enabled lifestyle changes to occur due to the continuous monitoring of personal movement behavior. By monitoring movement or lack of movement activities, participants were motivated to incorporate lifestyle changes that increased personal activity. Additionally, the participants claimed that the more movement they assimilated into personal routines, the more motivation there was for consistent exercise adherence.

Conclusion

Prior to this study, literature offered limited information about how existing digital fitness wristbands linked with social media network applications could establish motivation and adherence to physical activity and healthy behavior choices. The purpose of this study was to provide information regarding a venue for exercise adherence motivation toward physical activity via social media support. As the obesity epidemic overpowers the capability of clinicians to provide adequate and successful physical activity adherence programs, they could perhaps refer patients to acceptable social media network applications that link with digital fitness wristbands to increase healthy behaviors. Additionally, clinicians could use the social media technology to assist patients rehabbing from illness, injury, or surgery.

Limitations to the research included a population that had already made the choice to compete in a fitness challenge. Though the participants listed a sedentary lifestyle on the application, they had already made the choice to try and change behavior in the new year, which could have attributed motivation to exercise adherence (Granzin & Olson, 1989). Although the results suggest some intriguing findings, they obviously represent the outcomes of a relatively small sample. Future research should examine college student populations outside of the Northwest U.S. Perhaps other regions may yield alternative results. Future research should also conduct a quantitative study that compares an experimental group using social media derived exercise equipment to a control group with no social media derived exercise equipment. This should be a controlled study involving the social media intervention versus a non-social media control group to reveal whether social media is an effective means of increasing adherence to physical activity and healthy behaviors. Similar to this research, both groups should participate in a fitness challenge setting in which attendance and progressions could be monitored and assessed over a period of time. The results could provide further explanation of characteristics for exercise adherence motivation, frequency of physical activity and social media support for movement from the community members. Perhaps more definitive results from a quantitative model would provide fitness professionals as well as physical education and health educators' support for digital fitness equipment resources. Additionally, the results could possibly assist educators and clinicians inmotivating sedentary, overweight, or obese individuals to move more in their daily routines.

References

Ajzen, I. (1985). From intentions to action: A theory of planned behavior.In J. Kuhl & J. Beckmann (Ed.), *Action control: From cognition to behavior* (pp. 11-39). Berlin, Germany: Springer-Verlag GmbH.

Anderson, K., Burford, O. & Emmerton, L. (2016, May 23). "Mobile health apps to facilitate self-care: A qualitative study of user experience." PLOS One. http://dx.doi.org/10.137/journal.pone.0156164

Bates, D.W., Saria, S., Ohno-Machado, L., Shah, A. & Escobar, G. (2014). "Big data in health care: Using analytics to identify and manage high risk and high cost patients." Health Affairs. 33 (7) 1123.

Blanchard, C. M., Courneya, K. S., Rodgers, W. M., Fraser, S. N., Murray, T. C., Daub B., & Black, B. (2003). Is the theory of planned behavior a useful framework for understanding exercise adherence during phase II cardiac rehabilitation? *Journal of Cardiopulmonary Rehabilitation, 23*(1), 29-39.

Brunt, A., Rhee, Y., & Zhong, L. (2008) Differences in dietary patterns among college students according to body mass index. *Journal of American College Health, 56*(6), 629-634.

Casey, D. De Civita, M. and Dasgupta, K. (2009). Understanding physical activity facilitators and barriersduring and following a supervised exercise programme inType 2 diabetes: a qualitative study. *Diabetic Medicine*.

Cho, J., Park, D.J. & Ordonez, Z. (2013, Nov. 11). "Communication-oriented person-organizational fit as a key factor in job-seeking behaviors: Millennials' social media use and attitudes toward organizational social media policies." Cyberpsychology, Behavior and Social Networking. 16, p. 794-799.

Conner, K., Brady, R.R.W. & Tulloh, B. (2013, April 23). "Smartphone applications (apps) for bariatric surgery." Springer Science + Science Media.23:1669-1672.

Coughlin, S., Thind, H., Liu, B. Champagne, N. & Massey, R.I. (2016, April-June). "Mobile phone apps for preventing cancer through educational and behavorial interventions: State of the art and remaining challenges." JMIR MhealthUhealth 4 (2) e69.

Deci, E. L., & Ryan, R. M. (1975). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum Press.

Dishman, R. K., & Dunn, A. L. (1988). Exercise adherence in children and youth: Implications for adulthood. In R. Dishman (Ed.), Exercise adherence: Its impact on public health (pp. 155-200). Champaign, IL: Human Kinetics Books.

Donovan, J. (March 26, 2014) Best fitness gadgets and tech to get you into shape. Retrieved from http://www.digitaltrends.com/mobile/best-fitness-trackers-devices-gadgets/#ixzz2xZaw2WXz.

Douglas, K,. Collins J. L., & Warren C. (1997). Results from the 1995 National College Health Risk Behavior Survey. *Journal of the American College Health Association, 46*(2), 55–66.

Economos, C. D., Hildebrandt, M. L., & Hyatt, R. R. (2008). College freshman stress and weight change: Differences by gender. *American Journal of Health Behavior, 32*(1), 16-25.

Elliott, T. R., & Leung, P. (2005). Vocational rehabilitation: History and practice. In W. B. Walsh & M. L. Savickas (Ed.), *Handbook of vocational psychology* (3rd ed.) (pp. 319-343). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Fern, E. (1982). The use of focus groups for idea generation: The effects of group size, acquaintanceship, and moderator on response quantity and quality. *Journal of Marketing Research 19,* 1-13.

Fountaine, C. J., Liguori, G. A., Arupendra, M., &M. Schuna, J. M. (2011). Physical activity and screen time sedentary behaviors in college students. *International Journal of Exercise Science, 4*(2) : 102-112

Fuglestad, P. T., Jeffery, R. W., & Sherwood, N. E. (2012). Lifestyle patterns associated with diet, physical activity, body mass index and amount of recent weight loss in a sample of successful weight losers. *International Journal of Behavioral Nutrition & Physical Activity, 9*(1), p79-88.

Gomez, R., & Capelao, T. (2013). Commitment to exercise: The influence of personal, athletic, and psychological characteristics. *Universitas Psychologica, 12*(2), 505-515.

Goodman, E. S., Gail, B, & Huang, B. (2003). The public health impact of socioeconomic status on adolescent depression and obesity. *American Journal of Public Health, 93*(11), 1844-1850

Granzin, K. L., & Olson, J. B. (1989). Identifying those ready to make a voluntary commitment to fitness. *Jounral of Sport Maganment, 3*(2),116-128

Grave, R. D., Calugi, S., Centis, E., El Ghoch, M., & Marchesini, G. (2011). Cognitive-behavioral strategies to increase the adherence to exercise in the management of obesity. *Journal of Obesity,* 1-11.

Gruber, K. J. (2008). Social support for exercise and dietary habit among college students. *Adolescence, 43*(171), 557-575.

Hawkins, D. I., Best, R. J., & Coney, K. A. (2004). *Consumer behavior: Building marketing strategy.* New York: McGraw-Hill.

Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college: How social, economic, and educational factors influence the decisions students make.*Baltimore, MA: John Hopkins University Press.

Horyna, B., & Bonds-Raacke, J. (2012). Differences in students' motivation to attend college: Large versus small high schools. *Project Innovation, Inc., 132*(4), 708- 724.

Hoyt, J. E., & Brown, A. B. (2003). *Marketing UVSC: How prospective students view the college.* Unpublished manuscript.

Hsu, Y., Buckworth, J., Focht, B. C., & O'Connell, A. A. (2013). Feasibility of a Self-Determination Theory-based exercise intervention promoting Healthy at Every Size with sedentary overweight women: Project CHANGE. *Psychology of Sport & Exercise.* 14(2), 283-292.

Kahn, E., Ramsey, L., Brownson R., & Health, G. (2002). The effectiveness of interventions to increase physical activity: A systematic review, task force on community preventive services. *American Journal of Preventative Medicine, 22*(4S), 73-107.

Kavanaugh, D. (2009). Comparison of motivational factors between Japanese and United States high school students [Master's thesis]. Retrieved March 2, 2009, from http://www.eric.ed.gov/PDFS/ED505981.pdf

Kilpatrick, M., Hebert, E., & Bartholomew, J. (2005). College students' motivation for physical activity: Differentiating men's and women's motives for sport participation and exercise. *Journal of American College Health, 54*(2), 87-94.

Krueger, R. A. (1994). *Focus groups: A practical guide for applied research (2nd ed.).* Thousand Oaks, CA: Sage.

Lazer, W. (1963). Life style concepts and marketing. In S. Greyser (Ed.), *Toward scientific marketing* (pp. 140-151). Chicago: American Marketing Association.

Nielson Newswire (2014, Feb. 26). "Millennials: Technology = social connection." Retrieved from Nielson Newswire website on July 26, 2016 at http://www.nielsen.com/us/en/insights/news/2014/millennials-technology-social-connection.html

Ogden, C. L., Carroll, M. D., Kit, B. K., &FlegalK. M. (2012). Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA. 311*(8): 806–814.

Pagoto, S., Schneider, K., Jojic, M. &DeBlasse, M. (2013). Evidence-based strategies in weight-loss mobile apps.*American Journal of Preventative Medicine. 45*(5) 576-582.

Paulin, M., Ferguson, R., Jost, N. & Fallu, J-M. (2014). Motivating Millennialsto engage in charitable causes through social media.*Journal of Service Management. 25*(3) 334-348.

Pollock, M. L. (1988). Prescribing exercise for fitness and adherence. In R. Dishman (Ed.), Exercise adherence: Its impact on public health (pp. 259-277). Champaign: IL: Human Kinetics Books.

Pressler, A., Knebel, U., Esch, S., Kölbl, D., Esefeld, K., Scherr, J., Haller, B., Schmidt-Trucksäss, A., Krcmar, H., Halle, M., & Leimeister, J. M. (2010). An internet-delivered exercise intervention for workplace health promotion in overweight sedentary employees: A randomized trial. *Preventive Medicine, 51*(3/4), 234-239.

Purewal, S. J. (2013). *The five best fitness social networks for men.* Retrieved from http://www.menshealth.com/techlust/five-best-fitness-social-networks-men

Schlosberg, S. (1995). The hunks, the dumbbells, and you. *Health, 9*(1), 95.

Seal, D. W., Bogart, L. M., & Ehrhardt, A. A. (1998). Small group dynamics: The utility of focus group discussions as a research method. *Group Dynamics, 2,* 253-266.

Smith, A. (2015). U.S. smartphone use in 2015. Pew Recearch Center. Retrieved on July 25, 2016 from the Pew Research Center website at http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/

Stoll, S. K. (2007). *Virtue driven lives: What it takes to be a servant leader*. Football Edition, 3. Moscow, ID: Center for ETHICS*, University of Idaho.

Tarkan, L. (February 23, 2012). How social networking can boost your workout. Retrieved from http://www.foxnews.com/health/2012/02/23/how-social-networking-can-boost-your-workout/.

Teasdale, N., Hue, O., Marcotte, J., Berrigan, F., Simoneau, M., Doré, J., Marceau, P., Marceau, S., & Tremblay, A. (2007). Reducing weight increases postural stability in obese and morbid obese men. *International Journal of Obesity. 31*(1), 153-160.

Toraman, N. F. (2005). Short term and long term detraining: Is there any difference between young-old and old people? *British Journal of Sports Medicine, 39*(8), 561-564.

Turner, K. M., Salisbury, C., & Shield, J. H. (2012). Parents' views and experiences of childhood obesity management in primary care: A qualitative study. *Family Practice, 29*(4), 476-481.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement, 52*, 1003-1017.

VanDellen, M. (2010). Self-control is contagious. *Annals of the American Psychotherapy Association, 13*(1).

Veiga, O. L., Gómez-Martínez, S., Martínez-Gómez, D., Villagra, A., Calle, M. E., & Marcos, A. (2009). Physical activity as a preventive measure against overweight, obesity, infections, allergies and cardiovascular disease risk factors in adolescents: AFINOS Study protocol. *BMC Public Health, 9*, 475-485.

Vrazel, J., Saunders, R., Wilcox, S., (2008). An Overview and proposed framework of social-environmental influences on the physical activity behavior of women. *American Journal of Health Promotion,* 23(1), 2-12.

Weinstock, J. (2010). A review of exercise as intervention for sedentary hazardous drinking college students: Rationale and issues. *Journal of American College Health, 58*(6), 539-544.

Wharton, C.M., Adams, T., & Hampl, J.S. (2008). Weight loss practices and body image distortion among U.S. college students. *Journal of American College Health*, 56, 579-584.

Whitbourne, S. K. (May 12, 2012). *19 Reasons to Exercise.* Retrieved from http://www.psychologytoday.com/blog/fulfillment-any-age/201205/19-reasons-exercise.

Dr. Justin J. Barnes is an assistant professor in the School of Journalism and Mass Media at University of Idaho, Moscow, Idaho. Dr. Barnes teaches advertising/strategic communications plus advises the university's competitive advertising team. His principle research interests are: branding, advertising and integrated marketing trends in social media, pedagogical style and its impact on moral development, and athletic reputation and its impact on the perception of a university's academic quality/the big business of college athletics.

Dr. Yong-Chae Rhee is an assistant professor in the Department of Sports Management, Washington State University, Pullman, Washington. Dr. Rhee teaches sports management, sport market research and sport event planning, among other courses, at Washington State University. His overriding goal of research is to improve the understanding of sport consumer behavior focused particularly on the topic of fan identification. He is interested in identifying key consumer psychological variables that influence fan identification including Relative Deprivation and Social Identification. In addition, he is interested in the development and application of various statistical (structural equation model test) and methodological approaches (experimental and qualitative studies) to his research interest areas.

Dr. Rebecca J. Tallent teaches public relations and cultural diversity courses at the University of Idaho. A former journalist who covered the petroleum industry and finance in Oklahoma, Texas, Dr. Tallent also has 19 years of experience as a public relations specialist, primarily in the medical profession. She is a member of the National Board of Director for the Society of Professional Journalists and is a member of the Native American Journalists Association. Her principle research emphasis is in two areas: classroom pedagogy, especially critical thinking skills for the adult learner and Native American media law.