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# Online Fitness Social Networking Communities

Caitlyn Martinez
cmartinez1@my.uri.edu

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Online Fitness Social Networking Communities

Caitlyn R. Martinez

University of Rhode Island

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ONLINE FITNESS SOCIAL NETWORKING COMMUNITIES

**Introduction**

In the last decade, there has been a shift toward patient driven healthcare as a result of an increased amount of information and technology available. Patients are taking control of their healthcare and well-being by engaging in more a collaborative relationship with physicians and other professionals. They are able to measure, track, experiment, treat, and research their conditions, symptoms, and biomarkers while getting guidance and advice from professionals. Self-tracking has become much more prominent during this health care shift which is the collection of any data that can be measured about the self; biologically, physically, behaviorally, or environmentally (Swan, 2009). By observing and recording specific details about their bodies, individuals are enabled to analyze data in order to self-modify their behaviors in order to enhance their health (Lupton).

The beginning of this movement has been greatly influenced by the start of the "Quantified Self" in 2007 by Gary Wolf and Kevin Kelly which provides a wide range of features through an online social platform to people interested in self-tracking for physical chronic illnesses, physical activity, or any other health related reasons. It gives a means to share their experiences and interact with other users in similar situations (Lupton). Further, additional platforms that followed this invention include PatientsLikeMe, CureTogether, DailyStrength, MedHelp, and HealthChapter. Although users can inquire other users about health questions, these other users may not necessarily have any medical background (Swan, 2009).

Technological advancements have allowed individuals to use wearable monitoring devices in the form of wristbands, headbands, pendants, or devices clipped to clothing to specifically track their physical movement, blood glucose levels, body temperature, heart rate, blood pressure, sleep patterns, among many others. Additionally, companies such as Fitbit,

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Misfit, Microsoft, Nike, and Jawbone sell fitness devices that allow individuals to track fitness

related information such as steps, stairs, caloric burn, pulse, and resting heart rate (Lupton)

(Wright, 2016). Even when a person is resting, these technologies can log their heart rate and

how many calories they are burning. They are becoming a function of everyday life due to the

easiness of their use (Gilmore, 2016). It is important to understand what these devices can track

and how individuals are using them in order to further aid individuals in physical activity and

healthy living styles.

Physical activity plays a major role in a person's health and illnesses they may develop

such as coronary heart disease (Smarr, 2012). According to the Centers for Disease Control and

Prevention, only 20% of adults in the United States meet exercise guidelines (Zeng, Almquist,

and Spiro, 2017). Guidelines recommend 150 minutes of moderate level aerobic physical activity

and at least 2 days of strengthening training activities per week for adults (citation). Research has

indicated that this may be a result of many people not having the knowledge of the consequences

of not exercisin and being unmotivated,  including having no intention to be more physically

active or are insufficiently motivated when facing other interests or demands of their time

(Teixeira, Carraca, Markland, Silva, and Ryan, 2012).

Through engagement with these fitness apps and websites, individuals can form online

social networks that provide social support and convenient connection with others in a

nonjudgmental and anonymous environment (Wright, 2016). They can specifically allow

individuals from a variety of social and geographic backgrounds to share information and

perspectives about health resources that provide access to copious amounts of knowledge and

experience about fitness, physical activity, and self-tracking. By voluntarily sharing personal

data with other people, users engage in a communal self-tracking (Lupton). By shifting from an

interpersonal focus to a social and community-wide focus, individuals have the data and resources to work with and many people to go to for help online (Centola, 2013).

By understanding the population's interaction with these devices, websites, and apps, they can be modified, enhanced, and promoted in ways that benefit those in need of extra motivation and support to engage in necessary physical activity. There are many aspects and resources offered through the apps, websites, and devices that it is important to understand which ones work best for individuals or if a combination of them work better. It can also better be understood how the social networks, which have the potential to influence behavior, are formed. It is evident that through self-tracking, self-quantification, and social interaction that they positively influence engagement and commitment to physical activity and healthy living styles.

**Exercise Behavior and the Influence of Social Networks**

Research on different theories and models that guide exercise behavior has been conducted and has given insight to exercise. Based on these theories and models, there are certain factors that can significantly influence whether or not an individual will engage in physical activity. Some of these theories and models include, Theories of Reasoned Action and Planned Behavior, Self-Efficacy Theory, Self-Determination Theory, and the Transtheoretical Model. Many of the supports and effects of social networking in online fitness communities coincide with the factors that are believed to guide exercise behavior.

Theories of Reasoned Action and Planned Behavior states that intention is an immediate determinant of behavior and that intention is predicted from attitude and social factors. Attitude includes the beliefs held about exercise and the evaluation and value of the likely outcomes of exercise. Social factors may include beliefs about others and how motivated a person is to comply with beliefs or with other people (Biddle and Nigg, 2000). Online fitness social networks

can have social influences in which there is a real or imagined pressure to change one's

behaviors, attitudes, or beliefs (Lox, Martin, and Petruzzello, 2003). If an individual is engaged

in a fitness social network that has positive attitudes towards physical activity, that individual

may alter their previously negative beliefs about exercise.

Self-Efficacy Theory explains behavior through a person's self-efficacy which is defined

as the belief or confidence that one has the capabilities to perform a behavior that will result in a

certain outcome. Self-efficacy has been found to be one of the strongest variables related to

exercise behavior (Biddle and Nigg, 2000). Through high self-efficacy, an individual has a

strong belief that they have the capability to exercise and achieve fitness goals. Social networks

offer social support which includes psychological and material resources that are intended to

benefit an individual's ability to cope with stress such as comfort, care, and assistance (Cohen,

2004). If an individual's self-efficacy is low and they do not believe they have the ability to

engage in physical activity or achieve fitness goals, the social support from other users in a social

network may boost their belief and may motivate them to exercise.

Self-Determination Theory offers the idea of a continuum of intrinsic to extrinsic

motivation where different types of extrinsically regulated behaviors can be located (Biddle and

Nigg, 2000). Intrinsic motivation includes the idea of exercising for enjoyment whereas extrinsic

motivation is the desire to exercise because the person must exercise, because they would feel

guilty, or they want to get fit and have a better appearance. Intrinsic motivation is the personal

desire of feeling growth and challenging oneself, however extrinsic is influenced by the desire

for social recognition and improve personal appearances (Teixeira et al., 2012). Fitness social

networks have the ability to make exercise more enjoyable by gamifying through support,

collaboration, and competition and enhancing commitment to physical activity.

The transtheoretical model has interpreted behavior change as an intentional process that occurs over time and involves progress through a series of six stages of change which has led to the development of computer-tailored interventions that have been effective with a growing range of health-related problems such as smoking, exercise, diet, and stress (Prochaska, 2013). The stages of change of the transtheoretical model show that individuals face different conflicts at different levels of behavior change that social networks can aid with. For example, the initial stage of the transtheoretical model, the precontemplation stage, includes individuals who are not intending to take action in the foreseeable future. There is a lack of awareness of health consequences or they are demoralized about their abilities to change (Prochaska, 2013). Online social networks have proven to provide informational support that give people advice, guidance, or suggestions about how to best exercise and improve commitment. They can also provide emotional support through expressions of encouragement, caring, empathy, and concern toward the person (Lox, Martin, and Petruzzello, 2003). Ultimately, online fitness communities can buffer the initial negative feelings towards exercising and lack of awareness of the consequences of not exercising.

It is evident that the supports of social networking in online fitness communities can promote motivating and aiding factors indicated by the previously discussed exercise theories and models to engage and commit individuals to physical activity. Research has indicated that social networks provide social, informational, emotional, and instrumental supports. Through these supports, social networks can influence a person's behaviors, beliefs, and attitudes towards exercising (Lox et al., 2003).

Further, online fitness social networks influence physical activity by promoting independence over one's health and a way to interact with other users about their health and

physical activity. Users manage their own health bodies through these social networks (Bradley, Braverman, Harrington, and Wicks, 2006), monitor their nutrition intake, and track their weight, physical activity, and hours of sedentary activity (Mehta, 2011). They can have a sense of control over their bodies and health. This interaction online also gives a sense of normalcy because while self-tracking, they are interacting with others facing similar transitions or stressors who can offer information and guidance (Wright, 2016). Importantly, they can share their personal stories with others in the group and some may identify with their situation giving a sense of reassurance. They are able to understand that they are not the only ones working towards a fitness goal and not the only ones encountering obstacles in that journey (Hardiker and Grant, 2011).

Research of these online social networks has shown that there are many different ways that users interact. Users may interact through blogs or forums which are threaded dialogues that are available to all members to pose additional questions, research findings, or share coping strategies. Users may also interact through private messaging with one or more users. Within these means of communication, there are three themes of documented interactions. Asking for advice of other users with particular experiences, offering advice to users with specific symptoms or health struggles, and fostering relationships based on shared attributions are the three common themes (Frost and Massagli, 2008). These themes of interaction further support the encouragement and commitment to physical activity online fitness social networking communities provide to its users.

The various types of support that fitness apps and websites offer, enhance physical activity by motivating users to exercise and by giving them the confidence to continue through adversities they may encounter. Self-Efficacy Theory describes the importance of self-efficacy in physical activity and current research has further proven this theory. Self-efficacy being one of

the clearest positive correlate and determinant of physical activity in adults makes it important to promote with individuals trying to increase their physical activity (Bauman, Reis, Sallis, Wells, Loos, and Martin, 2012). Through support and interaction within social networks, users gain information and advice about physical activity and can increase the belief that they can set and accomplish physical fitness goals that will better their health.

**Group Engagements and the Effects**

An additional benefit of online fitness social networks is the group atmosphere that is created through interactions. Social networks create a group environment that can influence behaviors including exercise and dieting (Cohen, 2004). They can ultimately be used to create groups that have the potential to lead to greater adherence to fitness regimens, increase genuine enjoyment of exercising, and increase commitment to one's own goals (Mauriello, Gubbels, and Froehlich, 2014). Through these groups' interactions in apps, websites, and devices, exercise is gamified in which physical activities and exercising are made to be more fun and appealing. Apps and websites like Strava, Fitbit, and Garmin, offer badges and points for achievements as well as challenges for users to compete in against other users (Zeng et al., 2017). The apps, websites, and devices use game elements and visualizations in order to engage users in physical activity and in being mindful of how much they are exercising compared to others within their social network (Chen and Pu, 2014).

Despite being online, an individual can still engage in group competitions, competing for more points or badges that are earned by engaging in physical fitness. Users can also engage in cooperation where they contribute equally to win points and badges together or they can engage in a hybrid relationship where all users of a group can both cooperate and compete with one another. Cooperation promotes users' physical activity and brings social benefits such as

enjoyment and socialization with friends while exercising. Cooperation resulted in a 21%

increase in physical activity engagement whereas competition resulted in 8% increase in Chen

and Pu's research (2014). Research has shown that competition, cooperation, and hybrid can all

increase physical activity, increase positive feelings toward exercise, reinforce behavior, and

motivate individuals to continue physical activity despite adversities (Mauriello et al., 2014).

However, depending on the individual, others that they compete against may need to be

at similar levels physical abilities. Users are certainly motivated to pay attention to their physical

activity in a group because others are present, and they are all monitoring one another's activity.

As a result, they may feel obligated to increase physical activity to be at the same level or higher

than their competitors within the group or challenge. Continually, participants in Chen and Pu's

study on the app *HealthyTogether* indicated that they preferred to compete with others who were

regularly active as well, but with similar abilities. When others were significantly more active

and competitive with more steps and distance tracked throughout the day, their self-efficacy and

motivation decreased, believing they could never keep up and compete with them (Chen and Pu,

2014).

Zhang, Brackbill, Yang, and Centola also implemented a social media-based exercise

program with three separate groups, a control condition, a media condition, and a social

condition (2015). The individuals in the control condition were given online tools for enrolling in

exercise classes and tools for recording their progress. The media condition was given online

basic tools just as the condition but were also given promotional messages that encouraged

physical activity and motivational messages on a weekly basis. The social condition was given

basic tools for enrolling in classes and for recording progress, however these participants were

put into network groups of 4-6 anonymous peers that username, gender, age, school, information

about progress, and real-time notifications about peers' competition in classes were available for

others in the group to see (Zhang, Brackbill, Yang, and Centola, 2015).

In this research study, competition was isolated in one of the group conditions, the social

condition. Researchers found that the highest level of enrollment in classes occurred in the social

condition and participants in the social condition reported exercising moderately for an

additional 1.6 days on average each week than at baseline compared to an extra .8 days per week

in the control. Each condition led to some increase in physical activity which can be a result of

basic self-tracking tools, promotional motivation messages, or competition however, competition

resulted in highest increase in physical activity, whereas Chen and Pu found that cooperation

yielded more physical activity. Results of this study provide insight to the potential groups have

in significantly enhancing participation levels and self-reported levels of engagement with

physical activity, but also that further studies must be conducted in order to best understand

which condition best enhances physical activity (Zhang et al., 2015).

Additionally, when individuals in an exercise program at a cardiac rehab center were

encouraged to invite a friend, family member, or spouse to their sessions at the center, dropout

rates significantly dropped. Dropout rate went from 48% to just 10%. Having a person of support

to engage in physical activity increased adherence. This furthers the idea that group fitness

membership and social networking can greatly enhance physical activity commitment and if

implemented in online apps and websites, they may have similar effects (Burke, Shapcott,

Carron, Bradshaw, and Estabrooks, 2010).

Fitness groups produce an environment of overall positive energy in which people can

feel comfortable enough to get information about physical exercise, self-tracking devices, ways

to cope with stress or struggles of physical while competing with and working with other users

for points or badges (Zeng, Almquist, and Spiro, 2017). Research has begun to evaluate the

effects of groups in an online environment and has proven promising benefits to group

engagement online in these fitness apps and websites. These apps and websites can provide the

same benefits of in-person fitness groups, but also provide the option of anonymity, which many

users favor.

**Goal-Setting**

Goal-setting is another factor of online social networking communities that can be

enhanced for users. In a group setting, users are able to either set personal goals or group goals in

which all users of the group work towards. According to Locke and Latham, goal-setting has

been shown to greatly increase performance in physical activity and when publicized, there is

even more of a commitment to achieving the fitness goal (Burke et al., 2010).). The most

important factors of committing to one's goal include importance of goal attainment to that

individual and the individual's self-efficacy, or belief that he or she can achieve the set goal

(Consolvo, Klasnja, McDonald, and Landay, 2009).

In addition to the intrinsic factors influencing goal commitment, various extrinsic factors

also play a role. Lock and Latham stress the importance of feedback about about progress in

order to enhance goal commitment. If individuals do not know how they are doing, it is difficult

or impossible for them to adjust the level or direction of their efforts in order to match the goal

requirements (Locke and Latham, 2002). Online social networking communities provide a way

for users to publicize their goals in order to get feedback, so they can understand their progress

better, reinforce their exercise behavior, and gain support for achieving their goals.

Online fitness social networks also are able to enhance commitment to one's own

personal fitness goals. By assigning a personal goal, research has indicated an increase in self-

efficacy because it portrays an implicit expression of confidence and goal-setting can. Self-efficacy is a very important factor of goal commitment and achievement. Individuals with higher self-efficacy are more likely to set goals and to follow through on working towards achieving these goals (Locke and Latham, 2002). Online social networks have shown to increase confidence and self-efficacy by providing many different supports and by engaging in groups that provide these benefits, users will have the resources to set fitness goals and achieve them in order to maintain healthy lifestyles.

Researchers have begun to evaluate group goal setting in addition to individual goal-setting. Within a group, an individual can set a goal for themselves or for the group. The group can set a goal for each member or for the group itself (Burke et al., 2010).). If group set goals were implemented within the communities, they would be more likely to not let others down and would in turn be more active during times that they lacked motivation (Consolvo et al., 2009). Users would be more mindful of exercising to work towards the group goal along with other users in their group.

It is evident that goal-setting can be greatly beneficial for physical activity adherence and online social networking communities can further enhance commitment and motivate users, however further research should explore how to best implement goal-setting within the communities. Many individuals do not set goals or if they do, do not publicize them for others to provide feedback. By further understanding this engagement, researchers can understand how goal setting, individual or group, can influence physical activity and how online fitness social networking communities can aid in goal commitments.

**Conclusion**

     Research conducted thus far on fitness self-tracking devices, the resources they provide, and the benefits of engaging in online fitness social networking communities has proven many benefits in increasing physical activity. Online fitness social networking communities have the potential to provide informational support such as guidance and advice about physical activity and how to best engage in it. They can also provide emotional support in which users provide encouragement, care, empathy, and motivation with exercise as well as social support which can make physical activity more enjoyable and fun. This copious amount of support that online fitness social networking communities provide have the potential to greatly increase an individual's self-efficacy and intrinsic desire to be physically active in order to be healthy.

     Groups within these online fitness social networking communities also provide a way for users to engage in challenges to compete against others individually or in cooperation with other users. This engagement can provide motivation to exercise and be more mindful of how active they are. This gamified environment can make physical activity more enjoyable for users. Not only this, but group environments and fitness social networking communities support goal achievement that only furthers commitment and support. It is evident that as a result of the technological advancements, individuals are engaging in their health much more and taking control of their healthcare by self-tracking and collaborating with others as well as physicians.

     Although the already published research indicates many positive factors of online fitness social networking communities, the studies are small and not generalizable to the entire population. Samples for the cited studies range between 28 and 95 with one study sampling 217 individuals. However, this study of 217 individuals only evaluated college students which cannot generalize to other populations. This indicates the need for larger sampled studies on fitness self-tracking and online fitness social networking communities in order to best understand which

aspects are most used and efficient with users to increase physical activity. In doing so, these

apps, websites, and devices can be enhanced to better reach more of the population and

ultimately lead to healthier lifestyles.

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## Appendix A

Below is a survey that was distributed on various social networking platforms to assess use and attitudes towards fitness self-tracking devices and online fitness social networking communities. In underlined parentheses after each question and answer response are the variables used to analyze data received.

### Survey Questionnaire

1.  Do you use any fitness apps/websites/devices to track your exercises? (Fitbit, MyFitnessPal, etc.) (Use)
    a.  Yes (1)
    b.  No (2)
2.  If yes, which apps/websites/devices do you use? Check all that apply. (Apps)
    a.  Fitbit(1)
    b.  Garmin (2)
    c.  Nike+ (3)
    d.  MyFitnessPal (4)
    e.  Runkeeper (5)
    f.  Retro Fitness app (6)
    g.  Microsoft Band (7)
    h.  DailyMile (8)
    i.  DailyBurn (9)
    j.  MapmyRun (10)
    k.  Strava (11)
    l.  Facebook (12)
    m.  Other (13)
3.  Which app/website/device do you use most frequently? (Which frequently)
    a.  Fitbit (1)
    b.  Myfitnesspal (2)
    c.  Garmin (3)
    d.  Other (4)
4.  How frequently do you use the app/website/device? (How frequently)
    a.  Once a day (1)
    b.  Once a week (2)
    c.  A few times a week (3)
    d.  More than once a day (4)
5.  Why do you use the app/website/device? Check all that apply. (Why)
    a.  Meet new people (1)
    b.  Get information and advice about physical activity (2)
    c.  Gain support and feedback with exercise (3)
    d.  Gain support and feedback about my progress (4)
    e.  Track fitness and goals (5)
    f.  Take part in challenges (6)
    g.  Other: (7)
6.  What information do you track using this app/website/device? Check all that apply. If you do not track your exercise, check n/a. (Information)
    a.  Steps (1)
    b.  Distance (2)

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    c. Heart rate (3)
    d. Calories burned (4)
    e. Floors climbed (5)
    f. Type of exercise (6)
    g. Fitness goals (7)
    h. Nutrition intake (8)
    i. n/a (9)
    j. sleep (10)

7. Do you publicize your fitness goals on the app or website? Do publicize
    a. Yes (1)
    b. No (2)

8. Have you ever been exposed to the use of likes, comments, applauds, or cheers as feedback on the website/app/device? (Likes, comments)
    a. Yes (1)
    b. No (2)

9. If you have been exposed to likes, comments, applauds, or cheers, how does it make you feel?

10. How often do you exercise per week? (Often)
    a. I do not exercise (1)
    b. Once a week (2)
    c. 2-3 times per week (3)
    d. 4-5 times per week (4)
    e. 6-7 times per week (5)
    f. More than 7 times per week (6)

11. How often do you engage in moderate intensity or vigorous intensity level physical activity per week? (Intensity)

    *Moderate intensity includes walking briskly at 3 miles per hour or faster, water aerobics, or bicycling slower than 10 miles per hours and vigorous intensity includes race walking, jogging, running, hiking uphill, or bicycling 10 miles per hour or faster.
    a. Never(1)
    b. Rarely (2)
    c. Somewhat (3)
    d. Often (4)
    e. Always (5)

12. Do you engage in at least 2 days of muscle strengthening activities per week? (muscle)
    a. Yes (1)
    b. No (2)

13. In which way do you prefer exercising the most? (Prefer exercising)
    a. Alone (1)
    b. With a couple friends (2)
    c. In a fitness class (3)
    d. Other: (4)

14. Please indicate how much you agree or disagree with each of the following statements. scale

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|  | Strongly disagree | Slightly disagree | Disagree | Agree | Slightly Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 15. I work harder during exercise if I am with a couple other people. (Work harder) | (1) | (2) | (3) | (4) | (5) | (6) |
| 16. By tracking my fitness, I am better able to reach my physical fitness goals. (Tracking fitness) | (1) | (2) | (3) | (4) | (5) | (6) |
| 17. I work harder when competing with others towards the same goal. (Compete against for same goal) | (1) | (2) | (3) | (4) | (5) | (6) |
| 18. I prefer the help of a fitness expert with my physical fitness and tracking. (Fitness expert) | (1) | (2) | (3) | (4) | (5) | (6) |
| 19. When others encourage me, I make more progress towards my exercise goals. (Encourage me) | (1) | (2) | (3) | (4) | (5) | (6) |
| 20. I like the ability to be anonymous on fitness apps and websites. (anonymous) | (1) | (2) | (3) | (4) | (5) | (6) |
| 21. I increase my physical activity if I work with at least one other person towards a common fitness goal. (Work with for same) | (1) | (2) | (3) | (4) | (5) | (6) |
| 22. I am confident in my abilities to reach my fitness goals. (confident) | (1) | (2) | (3) | (4) | (5) | (6) |

16. 23. What gender do you identify as? (gender)
- a. Female (1)
- b. Male (2)
- c. Prefer not to say (3)
- d. Other: (4)

17. 24. How old are you? (age)
- a. 18-24 years old (1)
- b. 25-34 years old (2)
- c. 35-44 years old (3)
- d. 45-54 years old (4)
- e. 55-64 years old (5)
- f. 65-74 years old (6)
- g. 75 years or older (7)

18. 25. Are you currently a student? (Student)
- a. Yes (1)
- b. No (2)

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19. 26. If you are a student, what year of study are you currently in? <u>(Student year)</u>
   a.  Freshman (<u>1</u>)
   b.  Sophomore (<u>2</u>)
   c.  Junior (<u>3</u>)
   d.  Senior (<u>4</u>)
   e.  Graduate student (<u>5</u>)
   f.  Part-time or non-degree (<u>6</u>)

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**Appendix B**

N=61 (44 Female, 13 Male, 1 Transgender, 3 Preferred not to say)

| Variable | Mean/Standard Deviation |
|---|---|
| Age | M=3.119 |
| Student | M=1.678 |
| Student year | M=4.13 |
| Use | M=1.32 (0.47) |
| Apps | M=5.589 (5.10) |
| Which frequently | M=2.463 (1.32) |
| How frequently | M=2.6 (1.29) |
| Do publicize | M=1.89 (0.32) |
| Likes, comments | M=1.63 (0.49) |
| Often | M=3.22 (1.13) |
| Muscle | M=1.51 (0.50) |
| Prefer exercise | M=1.49 (0.90) |
| Work harder | M=3.46 (1.54) |
| Tracking fitness | M=3.71 (1.43) |
| Competing against for same goal | M=3.29 (1.64) |
| Fitness expert | M=3.37 (1.46) |
| Encourage me | M=3.41 (1.43) |
| Anonymous | M=3.93 (1.38) |
| Work with for same | M=2.97 (1.55) |
| Confident | M=4.09 (1.40) |