

Research Bites, May 2023, by Mary Yoke, PhD, FACSM, MA, MM

Can we increase exercise participation by considering a person's grit personality and motivation?

Are you familiar with the concept of grit? I imagine you know that grit, a noun, means small loose particles of stone or sand. However, it's also a relatively new term (e.g. as in grittiness) for the personality traits of perseverance, passion, resilience, courage, and conscientiousness. According to the Merriam-Webster dictionary, in this context grit means "firmness of mind or spirit". Angela Duckworth, PhD, is a researcher at the University of Pennsylvania, the author of a bestselling book on Grit (1), and a speaker on the subject in one of the most-viewed TED talks of all time (check it out!).

In a 2021 study, researchers De La Cruz et al wanted to examine the relationship between a grit-oriented personality and self-efficacy, various aspects of motivation, and readiness to change with regard to exercise (2). In Sonora, Mexico, 391 adults (ages: 18-64 years old; 48% male and 52% female) completed questionnaires, including the Grit Personality Scale, the Exercise Self-Efficacy Questionnaire, and the Stages of Change Questionnaire for Physical Activity.

Using a structural equation model, it was found that grit personality had a positive association with self-efficacy, as well as a positive association with autonomous motivation and readiness to change. Note: autonomous motivation is defined as having an internal feeling of exploration, curiosity, and pleasure for the mere sake of doing an activity. High self-efficacy, in turn, is more likely to be correlated with high levels of autonomous motivation, and a person with these characteristics will be more likely to achieve their goals, including physical activity goals.

De La Cruz et al write that the grit personality trait contributes positively to a person's belief about their ability to perform regular physical exercise. So how do you develop grit? According to Duckworth (1), there are five main strategies:

- Find your passion (the foundation of grit); pursue your interests
- Practice
- Feel and contribute to a sense of greater purpose

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- Give yourself time to become grittier (be patient) and persevere
- Surround yourself with gritty people

Grit is a characteristic that you and your clients can develop. Given that so much of the population is physically inactive, perhaps it's time to focus on becoming gritty in order to get people moving!

A Stair-Climbing Exercise Snack Study

Exercise snacks, movement snacks, activity/brain breaks, anyone? Whatever you call them, recent evidence suggests they're a good thing!

In 2020, researchers Rafiei et al (3) examined whether brief exercise "snacks" were effective in lowering certain metabolic effects, namely insulin, glucose, and free fatty acid responses after eating. High spikes of insulin, glucose, and free fatty acid (FFA) levels after eating have been linked to an increased risk of cardiovascular disease, still the number one cause of death in the United States and around the world.

Rafiei et al initiated two separate randomized crossover studies. Study 1 participants consisted of 12 young, healthy-weight men (age: 22.8 ± 4.3 years; BMI: 24.3 ± 2 kg-m⁻²), whereas Study 2 participants were comprised of 11 overweight/obese adults (age: 50.2 ± 14.3 years; BMI: 35.1 ± 6.4 kg-m⁻²). All participants completed two experimental trials: a sedentary trial involving sitting for 9 hours with minimal movement, and an exercise "snack" trial involving quickly climbing three flights of stairs once every hour. During the trials, meals for both groups were standardized and matched for calories consumed; meals were provided at the beginning of the day and again at 180 and 360 minutes. Blood samples were taken every 30 minutes for a total of 19 blood samples per person throughout the duration of the experiment.

So what were the findings? The main finding was that performing multiple short bouts of stair climbing snacks throughout an otherwise sedentary day helped to lower insulin response levels in middle-aged participants struggling with overweight or obesity (the younger, healthy weight participants did not show a significant decrease in insulin levels). As mentioned above, high surges of insulin after eating are linked with cardiovascular disease and early death.

The authors point out that the higher-intensity stair climbing bouts (three flights of stairs) require a minimal time commitment and may be more feasible for people whose jobs entail whole days of sedentary behavior at the workplace. Lack of time has been consistently reported to be a major barrier to exercise, along with convenient access to appropriate places to work out. Interrupting sitting time with frequent, short bouts of stair climbing (e.g. once per hour) may be just the ticket for weight-challenged individuals who want to reduce their risk of preventable disease.

Why don't more women engage in strength training?

We know that strength training is important for everyone, regardless of gender, due to multiple health and lifestyle benefits. Maintenance of muscle mass is essential throughout the lifespan, and weight-lifting helps preserve bone density and reduces the incidence of osteoporosis, a disease that affects women more than men. Strength training also helps prevent metabolic syndrome and osteoarthritis. Yet many women, even those who regularly exercise, don't engage in strength training. In a systematic review and qualitative meta-synthesis published in *Prevention Science* (4), researchers Vasudevan and Ford parsed the data to find out why. What are the motivators and barriers for women regarding strength training?

To address the question of why more women don't engage in strength training, the authors searched three large databases for peer-reviewed, published articles on the subject. Twenty papers were found that met all the authors' criteria for study eligibility, and six different themes emerged from the literature, with 12 sub-themes for exercise barriers and eight sub-themes for exercise motivators. The main themes for strength-training exercise barriers were social, psychological, lack of knowledge, physical, gym/financial barriers, and time. The main themes for strength-training motivators were social, psychological, higher levels of knowledge, and gym/financial incentives. Let's explore this further.

Barriers:

- 1) Social barriers. Many women reported feeling that their appearance was an issue, and not wanting to "look like a man" was frequently expressed. Comments from other people about how a woman should not look muscular were a disincentive. Some felt

that gyms were set up to segregate men into the weight room and women into the cardio area. It was reported that the sounds that men made while lifting caused women to feel unwanted in the gym. Women apparently often received unwanted advice from men, which made them feel criticized and judged. Some said they were made to feel like they were a nuisance—in the men’s way. A “pecking order” was sometimes perceived, meaning that stronger people seemed to “have more of a right” to be in the weightroom than someone who appeared to be weaker, causing women to feel intimidated. Lack of support from family members, friends, and significant others also added to the challenge of being a woman who strength trains.

- 2) Psychological barriers. Women frequently described getting poor results or unexpected results, such as actually gaining weight because of increased muscle mass. Some described strength training as being boring and repetitive.
- 3) Lack of knowledge. Not knowing what to do, how to set up a piece of equipment, or how to work a particular muscle appropriately were all factors, as well as the belief that strength training just wasn’t as important for women as for men.
- 4) Physical barriers. Injuries and post-workout pain deterred many women. Some said they would workout in the weightroom if they were “fitter” and when strength training “wouldn’t hurt so much”.
- 5) Gym infrastructure and financial barriers. This factor included a lack of gym accessibility and not having the right equipment either there or at home. Cost of gym membership was a problem for some. Gym instructors were frequently cited as being too strict, “pitbull-like”, guilt-tripping clients, and not concerned with injury prevention—all turn-offs.
- 6) Lack of time has often been cited as being the most common barrier to exercise. In the Vasudevan and Ford meta-synthesis, working women said they were exhausted, energy-less, and too busy balancing home and work life to strength train. Family constraints and caregiving simply made it too overwhelming.

Motivators:

- 1) Social motivators. Camaraderie helps! Being surrounded by other women of a similar background helped women feel more supported and more comfortable. It is

- motivating to see other like-minded women strength training. Women also appreciated positive comments from friends, family members, and significant others.
- 2) Psychological motivators. Many women said they felt they looked better; some liked the feeling of being strong. Improved confidence and empowerment along with visible, measurable progress was exciting. Older participants said it was fabulous to be able to get up and down out of chairs, and to climb stairs without pain. Higher energy levels and feelings of accomplishment were strong motivators.
 - 3) Knowledge was an important motivator. Knowing that strength training would improve their health and their activities of daily living was powerful. Also, knowing correct weight-lifting techniques and how to set up weightroom machines appropriately helped with maintenance.
 - 4) Gym infrastructure and financial motivators. Not surprisingly, gym accessibility was a key factor, along with having a skilled, caring, and motivating instructor.

To summarize, Vasudevan and Ford found that social barriers were cited more often than time barriers. Many women often just feel uncomfortable in strength training environments. This means that those of us who are fitness professionals have some work to do! Some of the strategies identified by the authors include offering strength training women-only programs, times, or gym areas, offering mobile phone apps that indicate the numbers of people currently at the gym, and holding sessions with female personal trainers/role models. Increased education for women about rates of progression and injury prevention would be helpful. Programs that minimize repetition (e.g. large numbers of same-exercise sets and reps) and that are family-friendly, engaging, and fun would be a step forward. As stated by Vasudevan and Ford, let's adapt our gym environments to make them more welcoming to women, and reduce gender-focused criticism!

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