

## **Barriers to exercise in a medical unit of US Army Reservists: An exploratory study**

**Keywords:** Exercise barriers, army reserves, medical unit

## **Introduction**

Participation in regular physical activity, energy-expending movements, confer many health benefits such as reduced chronic disease risk, even with minimal engagement (Warburton & Bredin, 2017). Although the benefits of physical activity for health and wellness are well-known, most US adults do not meet national physical activity guidelines for frequency and duration. As adults age, physical activity levels decrease due to reported barriers of time, experience, resources, and particularly intrinsic motivation (Ball et al., 2017). In reviews, lack of resources (Spitari et al., 2019; Choi et al., 2017) and accessibility as well as low personal self-efficacy were potential barriers reported for non-participation in regular physical activity by adults (Choi et al., 2017).

Exercise, and structured physical conditioning activities, have been demonstrated to improve disease risk and overall physical fitness. For working adults, a systematic review listed not only individual barriers to exercise participation at the workplace but also organizational barriers in the workplace environment (Mazzola et al., 2019) such as high workload levels and lack of time in the workday (Mazzola et al, 2017). For military members at their workplaces

around the world, optimal physical and mental fitness is required for mission readiness, and optimal levels of exercise contribute to personnel meeting military fitness standards (Majlesi et al., 2016).

### **Active-duty military healthcare workers and exercise**

Similar to other adults at the workplace, military healthcare workers, those who care for and educate patients in disease prevention and health promotion, experience barriers to exercise and personal wellness. In one study, only half of active duty army physicians surveyed reported frequently exercising, even though biannual physical fitness assessments are required (Hsu et al., 2018). In another study, for army hospital staff, mostly active duty personnel, time, motivation, and previous injury or condition were perceived as barriers. Interestingly, the higher the number of barriers perceived, the lower the self-rated level of survey participant health. In general, military healthcare staff in a hospital setting reported possessing similar perceptions about exercise barriers, lack of time and enthusiasm/motivation, as non-military adults (Hearn et al., 2018).

### **Military Reservist healthcare workers and exercise**

A unique group of healthcare workers, military Reservist healthcare workers must meet physical fitness standards and pass fitness tests similar to those on active duty (Malkawi et al., 2018). They, however, experience a distinctive occupational environment as citizen Soldiers. Their civilian careers as healthcare workers and their positions in the military both demand shiftwork, long hours, and critical response to high stress events (Hearn et al., 2018). Army Reservists are partially immersed in the military when they serve part-time, and they are fully immersed when they are mobilized and deployed. Reservists represent over half of the US troop

force, and they train with their units one weekend per month and usually two weeks per year. Physical and mental readiness of Reservists, especially those in healthcare occupations, is challenging (Griffiths et al., 2020).

Compared to active-duty Army Soldiers, Army Reservists tend to fail their fitness tests at higher rates and are less likely as compared to their active duty counterparts to participate in a high-intensity exercise that directly contributes to improved fitness (Russell et al., 2019). Although exercise and physical fitness may not be built into their civilian workdays like their active duty counterparts, Reservists are still responsible to meet required military fitness standards. Army Reservists face time and access as barriers, similar to adults in the general population. Additionally, their responsibilities to their dual roles/jobs and to their families are obstacles. In one study of healthcare worker Reservists, these barriers, either real or perceived, seemed to affect their exercise participation levels (Baisley, 2016).

A systematic review concluded that interventions in military settings that focused on high-intensity exercise may improve some fitness outcomes. However, due to a lack of strong evidentiary studies, those with a focus on educational or behavioral change could not be viewed as effective (Malkawi et al., 2018). Reservists, however, generally participate less often in fitness training, on their own, or as part of their civilian jobs, which also places them at higher risk of injury. To improve their fitness levels, a physical training regimen of aerobics (3x/week) and strength training (2x/week) has been recommended. Group fitness activities and the use of electronic tracking applications may also increase Reservist's motivation and adherence to training (Orr et al., 2016).

## **Purpose**

This study intended to add to the limited literature specifically addressing US Army Reservist healthcare workers and their exercise perceptions. Civilian and active duty military healthcare workers' perceptions have been explored, however, Reservists face some unique obstacles to exercising due to the dual responsibilities of their civilian occupations and their military roles. Awareness of any issues would benefit the Soldier, their family, and the military as all prepare to be mission-ready. For Reservists working in civilian healthcare occupations who also serve in medical roles in the military, this exploratory study aimed to describe their perceived barriers to exercise.

## **Methods**

### **Sample**

After IRB approval, 33 US Army Reservists serving in two medical units from a Midwestern state were asked to respond to a confidential written survey during a scheduled weekend battle assembly in spring 2022. All (100%) completed a consent form and responded with 30.3% identified to be male, 21.2% female, and 48.5% other. All were between the ages of 18-35. Medical and allied healthcare professions represented included nurses, nurse practitioners, emergency medical technicians, physicians, dentists, technicians/technologists, and veterinarians.

### **Instrument**

The Exercise Barriers/Benefits Scale, as a 43-question, Likert-type (4-Strongly agree, 3-Agree, 2-Disagree, 1-Strongly disagree) survey, was used to determine perceptions of adult respondents concerning their exercise behaviors, specifically perceptions of their barriers to exercise and the benefits of exercise. Used to obtain a total scale score and/or two sub-scale

scores, the scale possesses good internal consistency, validity, and reliability. Total score (Original Cronbach alpha = .952) and Benefits/Barriers scores (Original Cronbach alpha .953/.886) were calculated by summing item scores (with some Barrier items reverse-scored). Higher scores reflect more agreement with the statements (Sechrist et al., 1987). The instrument is fitting for this population, who may lack autonomy on some of these levels, due to the military's strict guidelines for behavior and commitment to work.

### **Procedure**

In this descriptive study, the Exercise Barriers/Benefits Scale was distributed to Reservist respondents immediately before an hour-long classroom presentation by local health educators on the topic of Developing and Sticking to an Exercise Routine (Navy and Marine Corps Public Health Center, n.d.) during a weekend battle assembly. Reservists frequently assemble during the weekends to avoid conflict with civilian careers, and this provided an opportunity for researchers to administer the survey at a convenient time. Respondents were not aware of the presentation topic, only their supervisor was knowledgeable, in order to decrease any survey response bias. Presentation sections included: goal-setting, guidelines, overcoming barriers, and encouragement to use the Army Physical Readiness Training (PRT) application (Rempfer, 2020) to assist with training schedules and exercises. Taking about two minutes to complete, the surveys were collected by the researchers, and the lesson presented.

### **Analysis**

Total score (Cronbach alpha = .952) and benefit/barrier scores (Cronbach alpha = .886) were calculated by summing item scores; some barrier items were reverse scored. Higher scores

reflect more agreement with the statements (Sechrist et al., 1987). See Appendix 1 for complete results of the survey.

## Results

### Total score

The results of the Exercise Barrier/Benefits Scale Total summed scores (scores can range from 43 to 172) demonstrate that Reservist respondents possesses relatively positive views towards the benefits of and overcoming the barriers to exercise ( $M = 112$ ,  $SD = 30.29$ ). See Appendix 1.

### Benefits scores

Among the highest scoring (reflects more agreement with the statement) Benefits were “Exercise improves overall body functioning for me” ( $\Sigma = 94$ ,  $M = 2.85$ ,  $SD = .906$ ), “Exercising is a good way for me to meet new people” ( $\Sigma = 93$ ,  $M = 2.82$ ,  $SD = .917$ ), and “Exercising lets me have contact with friends and persons I enjoy” ( $\Sigma = 90$ ,  $M = 2.73$ ,  $SD = .876$ ) with 75.7%, 66.6%, and 63.7% of respondents noting “Agree” or “Strongly Agree” to the statements, respectively.

The lowest scoring Benefits (reflects less agreement with the statement) were “Exercising makes me feel relaxed” ( $\Sigma = 81$ ,  $M = 2.45$ ,  $SD = .971$ ), “I will live longer if I exercise” ( $\Sigma = 82$ ,  $M = 2.48$ ,  $SD = 1.004$ ), and “Exercising improves my mental health” ( $\Sigma = 82$ ,  $M = 2.48$ ,  $SD = 1.202$ ) with 48.5%, 48.5%, and 51.5% of respondents noting “Agree” or “Strongly Agree” with the statements, respectively.

### Barriers score

Among the highest scoring Barriers (interfering most with ability to exercise) were “Exercise takes too much time from family relationships” ( $\Sigma = 90$ ,  $M = 2.73$ ,  $SD = .911$ ), “It

costs too much to exercise” ( $\Sigma = 90, M = 2.73, SD = .977$ ), and “Exercising takes too much time” ( $\Sigma = 89, M = 2.70, SD = .951$ ) with 66.7%, 60.6%, and 60.6% of respondents noting “Agree” or “Strongly Agree” to the statements, respectively.

Lowest scoring for Barriers (least intrusive on ability to exercise) were “Exercise tires me” ( $\Sigma = 79, M = 2.39, SD = .788$ ), “My spouse (or significant other) does not encourage exercising” ( $\Sigma = 80, M = 2.42, SD = 1.146$ ), and “I think people in exercise clothes look funny” ( $\Sigma = 82, M = 2.48, SD = 1.064$ ) with 39.4%, 45.5%, and 48.5% of respondents noting “Agree” or “Strongly Agree” with the statements, respectively.

## Discussion

Military Reservist healthcare workers must be physically fit for duty, however, their civilian and military job schedules may make it difficult to obtain optimal levels of exercise. A small group of US Army Reservists from two medical units participated in an exploratory survey to determine their perceptions of their exercise behaviors. Although over 60% of respondents perceived physical and social health as the top benefits of exercising, a similar proportion of respondents viewed lack of time, time away from family, and financial cost as the barriers that most interfered with their ability to exercise.

On one hand, respondents listed physical (75.7%) and social (66.6%) health, both exercise motivators, as the top benefits of exercising. On the other hand, though, taking time away from family to participate in exercise (66.7%), even if motivated, seemed to interfere the most with respondent exercise behaviors. Similar to non-military adults and active-duty military medical staff, lacking time in the day to exercise due to a high workload (Mazzola et al, 2017; Hearn et al., 2018) was seen as a barrier. Completing their duties as civilians and also following

military standards of fitness is a time management challenge. Respondents also listed cost (60.6%) as another top barrier. Lack of resources and access did not generally seem to be a barrier, though, for active duty medical staff who have on-base access to fitness and recreation facilities. However, non-military adults and Army Reservists, in general, have reported these as barriers in the literature (Sitari et al., 2019; Choi et al., 2017; Baisley, 2016).

Respondent perceptions of exercise barriers in this study seem to most mirror the beliefs of their non-military counterparts with time and resources as top barriers. The ability to exercise to obtain optimal fitness levels, though, is imperative for mission readiness (Majlesi et al., 2016). Possibly due to these perceived barriers, respondents' exercise behaviors may be affected, similar to results of another study of healthcare worker Reservists (Baisley, 2016). Like other Army Reservists (Russell et al., 2019), respondents may be at risk of not obtaining adequate exercise frequency, intensity, or duration for optimal physical fitness.

To overcome the barriers of time and cost for this population, some possibilities exist. If respondents' civilian healthcare workplaces lack fitness facilities, or even if they possess a facility, there may be limited time for extended exercise in a healthcare workers' daily job schedule. Therefore, using no-cost videos or digital fitness applications like the Army PRT application provides easy access to military-specific training regimens. Interval training or circuit workouts, combining aerobic and body weight-based strength exercises, can be completed at home during non-work time, too. Family can also participate as a group exercise activity to overcome time taken away from family. Higher intensity workouts of shorter duration with brief rest periods, conducted at home or at the gym (Malkawi et al., 2018), may also save valuable time. Also, underwriting gym memberships for Reservists with limited access to training facilities could be explored by the military. The Army and its employees may benefit from

setting aside time in mandated programming for educational interventions regarding healthy exercise behaviors, and/or their civilian employers may benefit from allotting time to Reservists to achieve these physical goals within the workday. While this might appear costly in time and money, the return in productivity, positive worksite community health, and individual increases in quality of life would be more than worth the investment.

As an exploratory, descriptive, survey study, limitations of survey research apply. Because the instrument was distributed in person by the researchers, respondents may not have been truthful due to social desirability. They may have felt discomfort with presenting themselves in a negative light, and question options may have had different interpretations by different respondents. The small sample size and lack of a non-Reservist control group are also limitations.

As a next research step, an avenue for future study and follow-up to this exploratory study is to examine Army Reservist medical staff's barriers by type of civilian and military healthcare job held and number of deployments. Because time available for exercise and cost are perceived factors, position or level in the healthcare organization as well as exercise activity level during deployment may be determining variables. Comparing perceptions of exercise barriers and benefits with Army fitness test results may help better understand the specific effect of each barrier on exercise participation. Implementing recommended interventions such as Reservists using the Army PRT application or high intensity training to overcome perceived barriers may also broaden the examination.

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Appendix 1. *Highest and lowest exercise benefits and barriers*

	N	Min	Max	Mean	SD
Total Scores for Exercise and Barrier	33	49	168	112	30.29
<b>Benefits</b>	% (n) Agree & Strongly Agree		Sum	Mean	SD
Exercise improves overall body functioning for me.	75.7% (25)		94	2.85	.906
Exercise is a good way for me to meet people.	66.6% (22)		93	2.82	.917
Exercise lets me have contacts with friends and persons I enjoy.	63.7% (21)		90	2.73	.876
Exercise helps me sleep better at night.	63.6% (21)		90	2.73	1.008
Exercise improves my mental health.	51.5% (17)		82	2.48	1.202
I will live longer if I exercise.	48.5% (16)		82	2.48	1.004
Exercise makes me feel relaxed.	48.5% (16)		81	2.45	.971
<b>Barriers</b>	% (n) Agree or Strongly Agree		Sum	Mean	SD
Exercise takes too much time from family relationships.	66.7% (22)		90	2.73	.911
It costs too much to exercise.	60.6% (20)		90	2.73	.977
Exercising takes too much time.	60.6% (20)		89	2.70	.951
I am fatigued by exercise.	51.5% (17)		88	2.67	.816
I think people in exercise clothes look funny.	48.5% (16)		82	2.48	1.064
My spouse (or significant other) does not encourage exercising.	45.4% (15)		80	2.42	1.146
Exercise tires me.	39.4% (13)		79	2.39	.788

## Appendix 1: Results of Exercise Benefits/Barriers Scale

<b>Descriptive Statistics</b>						
	N	Minimum	Maximum	Sum	Mean	Std. Deviation
I ENJOY EXERCISE.	33	1	4	84	2.55	1.063
EXERCISE DECREASES FEELINGS FOR STRESS AND TENSION FOR ME.	33	1	4	83	2.52	1.176
EXERCISE IMPROVES MY MENTAL HEALTH.	33	1	4	82	2.48	1.202
EXERCISING TAKES TOO MUCH TIME.	33	1	4	89	2.70	.951
I WILL PREVENT HEART ATTACKS BY EXERCISING.	33	1	4	84	2.55	1.003
EXERCISE TIRES ME	33	1	4	79	2.39	.788
EXERCISE INCREASES BY MUSCLE STRENGTH.	33	1	4	86	2.61	1.116
EXERCISE GIVES ME A SENSE OF PERSONAL ACCOMPLISHMENT.	33	1	4	88	2.67	1.109
PLACES FOR ME TO EXERCISE ARE TOO FAR AWAY.	33	1	4	79	2.39	1.059
EXERCISING MAKES ME FEEL RELAXED.	33	1	4	81	2.45	.971
EXERCISING LETS ME HAVE CONTACT WITH FRIENDS AND PERSONS I ENJOY.	33	1	4	90	2.73	.876
I AM TOO EMBARRASSED TO EXERCISE.	33	1	4	83	2.52	1.064
EXERCISING WILL KEEP ME FROM HAVING HIGH BLOOD PRESSURE.	33	1	4	84	2.55	1.003
IT COSTS TOO MUCH TO EXERCISE.	33	1	4	90	2.73	.977
EXERCISING INCREASES MY LEVEL OF PHYSICAL FITNESS.	33	1	4	87	2.64	1.194
EXERCISE FACILITIES DO NOT HAVE CONVENIENT SCHEDULES FOR ME.	33	1	4	87	2.64	.962

### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
MY MUSCLE TONE IS IMPROVED WITH EXERCISE.	33	1	4	87	2.64	1.084
EXERCISING IMPROVES FUNCTIONING OF MY CARDIOVASCULAR SYSTEM.	33	1	4	87	2.64	1.194
I AM FATIGUED BY EXERCISE.	33	1	4	88	2.67	.816
I HAVE IMPROVED FEELINGS OF WELL BEING FROM EXERCISE.	33	1	4	85	2.58	1.062
MY SPOUSE (OR SIGNIFICANT OTHER) DOES NOT ENCOURAGE EXERCISING.	33	1	4	80	2.42	1.146
EXERCISE INCREASES MY STAMINA	33	1	4	85	2.58	1.032
EXERCISE IMPROVES MY FLEXIBILITY.	33	1	4	84	2.55	1.003
EXERCISE TAKES TOO MUCH TIME FROM FAMILY RELATIONSHIPS.	33	1	4	90	2.73	.911
MY DISPOSITION IS IMPROVED WITH EXERCISE.	33	1	4	85	2.58	.969
EXERCISING HELPS ME SLEEP BETTER AT NIGHT.	33	1	4	90	2.73	1.008
I WILL LIVE LONGER IF I EXERCISE.	33	1	4	82	2.48	1.004
I THINK PEOPLE IN EXERCISE CLOTHES LOOK FUNNY.	33	1	4	82	2.48	1.064
EXERCISE HELPS ME DECREASE FATIGUE.	33	1	4	86	2.61	.933
EXERCISING IS A GOOD WAY FOR ME TO MEET NEW PEOPLE.	33	1	4	93	2.82	.917

### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
MY PHYSICAL ENDURANCE IS IMPROVED BY EXERCISING.	33	1	4	86	2.61	1.059
EXERCISING IMPROVES MY SELF-CONCEPT.	33	1	4	86	2.61	1.029
MY FAMILY MEMBERS DO NOT ENCOURAGE ME TO EXERCISE.	33	1	4	84	2.55	1.092
EXERCISING INCREASES MY MENTAL ALERTNESS.	33	1	4	84	2.55	.971
EXERCISE ALLOWS ME TO CARRY OUT NORMAL ACTIVITIES WITHOUT BECOMING TIRED.	33	1	4	89	2.70	.883
EXERCISE IMPROVED THE QUALITY OF MY WORK.	33	1	4	88	2.67	.816
EXERCISE TAKES TOO MUCH TIME FROM MY FAMILY RESPONSIBILITIES.	33	1	4	88	2.67	.957
EXERCISE IS GOOD ENTERTAINMENT FOR ME.	33	1	4	89	2.70	.883
EXERCISING INCREASES MY ACCEPTANCE BY OTHERS.	33	1	4	88	2.67	.816
EXERCISE IS HARD WORK FOR ME.	33	1	4	84	2.55	.833
EXERCISE IMPROVES OVERALL BODY FUNCTIONING FOR ME.	33	1	4	94	2.85	.906
THERE ARE TOO FEW PLACES FOR ME TO EXERCISE.	33	1	4	86	2.61	1.029
EXERCISE IMPROVES THE WAY MY BODY LOOKS.	33	1	4	83	2.52	.972
Valid N (listwise)	33					