

Relationship between Self-Efficacy and Push-Up Performance among Male Gymnasium Members

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Abstract. The main objective of this study is to identify the relationship between self-efficacy and push-up performance among male gymnasium members. This study is a quantitative study, and this proposed study adopted a non-experimental study, survey correlational design. The respondents were male gymnasium members of World Fitness Gym, Bukit Rahman Putra, Sungai Buloh (n=14) first completed questionnaires assessing their medical health status, determining their physical activity daily living, and identifying their self-efficacy to perform push-up test. After completing the questionnaires, participants performed 1-minute push-up test to determine their fitness performance. The data were analysed using the Pearson-correlation coefficient to find the relationship between variables. Results showed that there is a very low positive association and no significant relationship between self-efficacy and push-up performance among male gymnasium members ($r = .18$, $n = 14$, $p > .05$). In future, this study recommended to investigate the relationship between self-efficacy and push-up performance among female gymnasium members and compare between male and female. Besides, future study should involve other types of exercise such as muscular strength, flexibility, and cardiorespiratory endurance to compare the performance between exercises.

Keywords: Self-Efficacy, Physical Activity, Push-Up Performance, Gymnasium.

1 Introduction

Push-up is one of the basic and the most common exercise used to measure muscular endurance of the upper body (Hassan, 2018 [10]; Thomas et al., 2018) [11]. The benefits are its simplicity with no equipment or cost needed. Besides, this exercise trains neuromuscular coordination (Chuckpaiwong & Hamroongroj, 2009) [12], enhances upper body strength and endurance (Van Den Tillaar, 2019) [13], and it is an upper body and multi-joint exercise designed to increase upper extremity, shoulder, and core stability (Johnson, Meador, Bodamer, Langford, & Snarr, 2019) [14]. Push-up position may be varied among researchers. The common position as stated

by Azeem and Mohammed (2019) [15] is a prone position by extending and lowering the arms repetitively. While, according to Baumgartner, Oh, Chung, and Hales (2002) [16], they stated about a 90° angle at the elbow during downward movement of push-up. It is important to maintain a proper body positioning throughout push-up activity to build strength and stamina, as well as to limit the potential injury (Hewit, Jaffe, & Bedard, 2018) [17].

Self-efficacy was a theory developed by Bandura within the framework of social cognitive theory (Feltz, Short, & Sullivan, 2008) [18]. Self-efficacy is also defined as the belief in an individual's capabilities to act as required to achieve the goals (Bandura, Freeman, & Company, 1997) [19]. According to Ede, Sullivan, and Feltz (2017) [20], self-efficacy theory is the stronger one's self-efficacy belief the more challenging are the tasks, the greater the effort, and the more motivation to achieve the goals. Thus, self-efficacy can be related to effort, persistence, and performance. In terms of exercise, self-efficacy can be one of the most important major trainers to improve skills and performance (Ismail, 2018) [8]. Besides, self-efficacy can encourage people to involve in physical activity to improve their quality of life (Medrano-Ureña, Ortega-Ruiz, & Benítez-Sillero, 2020) [22].

With the association between self-efficacy and push-up performance, some people have higher self-efficacy to do exercise, and some are not. This can cause by many factors. According to Miller et al. (2019) [23], 15% of older adults had been affected by depression, and this health condition affects exercise performance because they lack self-efficacy and self-confidence. A study by Olugbade, Bianchi-Berthouze, Marquardt, and Williams (2018) [24] mentioned that one's lack of self-efficacy to do exercise was due to afraid repeated and continuous pain even though that person had undergone rehabilitation. Other studies conclude that muscular endurance can improve self-efficacy and thus the potential for being physically active among the congenital heart disease population (Bay, Sandberg, Thilén, Wadell, & Johansson, 2018) [25]. Lastly, participation in exercise and sports is beneficial for psychosocial health among children and adolescence with a disability (Te Velde et al., 2018) [26].

This study was conducted due to some issues found in previous articles. Self-efficacy is one of the variables to measure in this study. Previous study used different versions of self-efficacy scale. A study by Reverdito et al. (2017) [27] used the Self-Efficacy General Scale (GSES-12) to measure perceived self-efficacy on physical activity among adolescents. Other study by Anstiss, Meijen, Madigan, and Marcora (2018) [28], they used Endurance Sport Self-Efficacy Scale (ESSES) to measure endurance sport performance. While according to Ismail (2018) [29], he developed a new push-up self-efficacy scale which the scale arranged to represent increasing levels of complexity with the task. Thus, there still have no specific self-efficacy scale to measure self-efficacy to regulate exercise.

While there has been a few research on unhealthy population such as mental health problem, obese people, and chronic disease problem, only few researchers have taken healthy populations into consideration especially gymnasium members. This includes a study by Annesi, Smith, Walsh, Mareno, and Smith (2016) [29], stated that there is a significant relationship between exercise self-efficacy and push-up performance among obese people. A psychosocial failure such as patient knowledge and understanding of self-care requirements, social supports, and mental health are predictors of exercise behavior that lead to a lack of self-efficacy to do exercise (Ha, Hare, Cameron, & Toukhsati, 2018) [30]. Another study by Smith, Diallo, Bennie, Tomkinson, and Lubans (2020) [31] stated that there is a significant effect of resistance training

self-efficacy on push-up performance. According to Gao and Xiang (2007) [32], self-efficacy is a mediating effect to achieve a good push-up performance.

1-minute push-up test is one of the measurements for muscular endurance which were the important health-related elements for physical activity. A push-up test is acceptable fitness test used by trainers, coaches, and athletes to test for upperbody strength and endurance (McManis, Baumgartner, & Wuest, 2000) [33]. In this study, the researcher used normal push-up procedure adopted by Beck et al. (2015) [34]. However, the proper position is still questioned among researchers. According to McManis et al. (2000) [33], the down position should be a 90° angle at elbow. While a study by Hassan (2018) [35], he was generally mentioned the push-up up position which the hands should be placed on either side of the chest, the back should be kept straight, and the chest should be lowered towards the floor, always to the same level each time.

Thus, researchers are still failure to correctly assume the down position or up position, or keep the body straight, results in a push-up not being counted (Baumgartner et al., 2002) [36]. In response to the identified problems, therefore the purposes of this study are to determine the self-efficacy among male gym members, to observe the push-up performance among male gym members, and to identify the relationship between self-efficacy and push-up performance among male gym members. The self-efficacy scale suitable in this study is the original by Bandura (2006) [37] and the push-up procedures used in this study adopted by Ismail (2018) [8]. At the end of this research, the researcher would like to find out either there has a significant relationship or no relationship between both variables.

2 Methods

This study is a quantitative study because the objective is to find the relationship between two variables. This proposed study adopted a non-experimental study, survey correlational design. The participants answered three types of questionnaires. There is no training provided. However, the participants performed a push-up test for exercise performance. The advantage of conducting a survey study is because it is very helpful in correlational research. In addition, the results of correlational research are easy to classify because of the terms coefficient correlation. It showed the strength of the relationship between the two variables. Thus, it figures the potential outcomes. However, a survey study will lead to the dishonesty of the sample. Thus, to avoid this situation, the samples were asked to answer it honesty.

This study used probability sampling technique which is a simple random sampling technique involving fourteen male gym members of World Fitness Gym, Bukit Rahman Putra, Sungai Buloh, Selangor. Their average age were 25-35 years old. The races of the participants were Malay males. The year of gym membership from 1-3 years. The exclusion criteria included anyone who had a previous musculoskeletal injury issue such as fracture to avoid any recurrent complication. The instrumentations used were three questionnaires followed by one exercise test which is push-up test. These questionnaires need to be completed before performing the exercise test. After that, participants performed 1-min push-up test. This test included warming up session and cooling down session. The three questionnaires are Physical Activity Readiness Questionnaire (PAR-Q) to provide initial health and medical assessments, Physical Activity Scale (PAS) to measure the physical activity of the participants, and lastly is Self-Efficacy Scale (SES) to determine the self-efficacy of the participants. Followed by 1-minute push-up test

adopted by Motimath, Koyande, and Chivate (2019) [38] including warm-up and cooling down sessions.

This study identified the relationship between self-efficacy and push-up performance among male gym members. All data were measured using SPSS version 25.0. Kolmogorov-Smirnova test suggested that self-efficacy scale among male gymnasium members were normally distributed, $df(14)$, $p = 0.20$. Kolmogorov-Smirnova test suggested that self-efficacy scale among male gymnasium members were normally distributed, $df(14)$, $p = 0.10$. The relationship between both variables were measured using Pearson-correlation coefficient in the SPSS. The result showed in the table below that there was a very low positive association and there was no significant relationship between self-efficacy and 1-minute push-up, $r = .083$, $n = 14$, $p > .05$.

		Self-Efficacy Scale	1-minute Push-up
Self-Efficacy Scale	Pearson Correlation	1	.083
	Sig. (2-tailed)		.777
	N	14	14
1-minute Push-up	Pearson Correlation	.083	1
	Sig. (2-tailed)	.777	
	N	14	14

Note. *Correlation is significant at the 0.05 level (2-tailed)

3 Results

The purpose of this study was to determine the relationship between self-efficacy and push-up performance among male gymnasium members. The hypothesis there was no significant relationship between self-efficacy and 1-minute push-up among male gymnasium members. Results revealed that the relationship between variables was a very low positive relationship, $r = .083$, and no significant relationship between self-efficacy and 1-minute push-up, $p > .05$.

The Level of Self-Efficacy among Male Gymnasium Members to Regulate Push-Up Exercise

As mentioned above, the theories of self-efficacy were varied among researchers. However, they are all referred to Bandura's theory to conduct their studies. Ismail (2018) [8] mentioned that self-efficacy can be one of the most important major trainers to improve skills and performance. Thus, this study adopted the Self-Efficacy Scale (SES) by Bandura (2006) [37] to measure the self-efficacy of the participants to regulate exercise. In Malaysia, a study about the level of self-efficacy of male gym members after push-up exercise is lack conducted. The researcher only found one study by Ismail (2018) [8] who has conducted research that related to this topic.

The level of self-efficacy scale used to measure the participants' belief in their capabilities to perform the highest repetitions of exercise. In this study, the subjects asked to perform 1-minute push-up test. Thus, the researcher wanted to determine the confident level of male gymmembers to do a push-up test with optimal performance in one minute. This study found that the level of self-efficacy among male gymnasium members was significant, $p > .05$. By supporting the self-efficacy theory by Ede et al. (2017) [41], the researcher had agreed that the stronger one's self-efficacy belief more challenging are the tasks, the greater the effort, and the more motivation to

achieve the goals. So, self-efficacy can be related to the effort, persistence, and performance. This study is non-experimental study which is no training program provided for the participants.

Self-efficacy somehow can encourage people to improve the sports performance. According to DeNysschen, Cardina, Sobol, Zimmerman, and Gavronsky (2018) [42], the new members or untrained persons are likely to have low self-efficacy compared to expert members. Besides, a few weeks of training program also can encourage people to increase their self-efficacy to do better in exercise performance because they are trained every week with the proper techniques. The enhancement of the self-efficacy can be influenced by the environment and facilities of the gym (Gjæstvang, Stensrud, Paulsen, & Haakstad, 2021) [43]. This study supported by Riseth, Nøst, Nilsen, and Steinsbekk (2019) [44] with statement that the gym or fitness centres should be mainly described as a comfortable place and easily accessible for physical activity so that the gym members can make commitments and give supports to the gym.

4 Discussion

The Push-up Performance among Male Gymnasium Members

The position of push-up exercise is varied among researchers. However, this study performed a standard push-up position, and the test procedure is adopted by Ismail (2018) [8]. The subject performed with the thumbs at shoulder width. The lifter needed to keep his body straight from head to feet. One previous study used 90° push-up to measure the reliability of muscular endurance as an essential component of physical fitness (McManis et al., 2000)[33]. They reported the reliability coefficients is between .22 and .87. Another study had used a 90° push-up test to examine the muscular strength and endurance for the upper part of body (Hashim, 2012) [47] and found that male students compared to female students, recorded higher validity values by performing the test. The push-up performance of male gymnasium members was measured after the participants completed the questionnaires. As this study was running through virtual assessment, the researcher used standard push-up procedure without using any proper tools. This is because of the availability of facilities, equipment, surrounding of the participants' places. This study found that the score of a 1-minute push-up test among male gymnasium members was significant, $p > .05$.

Based on the Physical Activity Scale (PAS) answered by all participants, the more active during daily lifestyle, the better the result of the participants. PAS provides details information about the duration of physical activity in various domains (Andersen et al., 2010) [48]. A purpose of study by Aadahl and Jørgensen (2003) [49] was to do a validation of physical activity scale for measuring physical activity in 24 hours of sports, work, and leisure time on an average weekday. The result showed that the correlation between the activity scale and the diary was high. Means that the physical activity scale appears to be a valid alternative to measure physical activity by diary in adult sedentary and moderately active. One of the reasons of using PAS because the researcher cannot control the activity daily living of the participants. As this study have no training provided, the significant associations among the variables as noted from the results were probably influenced by an uncontrollable factor such as the daily activities of the participants (Ismail, 2018) [8].

An exercise routine can be one of the factors to have high self-efficacy and get a better results of push-up performance. However, this study was not experimental research which involve

participants to do a training program. The participants were asked to answer the questionnaires and the researcher just observe the participants' push-up performance through virtual assessment as well as record the scores. Thus, there results only showed the scores of push-ups after they completing all questionnaires. A study by Wills, Saxby, Glassbrook, and Doyle (2019) [50] to identify the effect of 8-weeks training programs to physical performance including push-up. It showed that, involve in training program can significantly increase the scores of physical performances.

The Relationship between Self-Efficacy and Push-Up Performance among Male Gymnasium Members

The relationship between self-efficacy and push-up performance among male gymnasium members was analyzed using Pearson's correlation coefficient in SPSS. The results showed that there is no significant relationship between self-efficacy and push-up performance among male gymnasium members. This study supposedly showed that there is a significant relationship between both variables. However, in terms of the instrument, it affects the result of the study. Thus, the hypothesis which is there is no significant relationship between self-efficacy and push-up performance among male gymnasium members fail to reject. Moritz, Feltz, Fahrbach, and Mack (2000) [51] in previous findings showed that the increase push-up performance followed the enhancement of a person's levels of self-efficacy. A previous study by Kane, Marks, Zaccaro, and Blair (1996) [52] stated that self-efficacy is a stronger predictor and can be a factor to the positive performance. The year of membership also can influence the participants' exercise performance. The new members may have low self-efficacy compared to others. However, the gym trainers can encourage the new members to follow a beneficial and comfortable regime (Ismail, 2018) [8]. This is somehow can enhance the level of self-efficacy to get a better exercise performance.

All in all, this study completed the research on determining the relationship between self-efficacy and push-up performance among male gymnasium members. Previously, studies of finding the relationship between self-efficacy and push-up performance has been proved by most researchers specifically when involving chronic patient diseases. This study determined the relationship between variables among male gymnasium members. From the result and discussion of this study, there are several recommendations for future research to investigate. The researcher should investigate the relationship between variables among female gymnasium members. Besides, the type of exercise also needs to be change and not only focus on push-up performance. To get a better result, the instruments to monitor a push-up performance or other types of exercise techniques should be standardized such as by using a sponge to monitor the downward position during push-up or a rope to monitor the upward position during sit-up. The last but not least, virtual meeting is not a suitable way to assess exercise performance because the techniques cannot be standardized. It can be monitored better when doing face to face meeting. Thus, it is better to do face to face assessment so that the researcher can get a better result, can control the movement of the study, and can clearly coach the participants about the techniques to be used in this study.

5 Conclusion

Studies of finding the relationship between self-efficacy and push-up performance has been proved by most researchers specifically when involving chronic patient diseases. This study

determined the relationship between variables among male gymnasium members. From the result and discussion of this study, there are several recommendations for future research to investigate. The researcher should investigate the relationship between variables among female gymnasium members. Besides, the type of exercise also needs to be changed and not only focus on push-up performance. To get a better result, the instruments to monitor a push-up performance or other types of exercise techniques should be standardized such as by using a sponge to monitor the downward position during push-up or a rope to monitor the upward position during sit-up. Last but not least, virtual meeting is not a suitable way to assess exercise performance because the techniques cannot be standardized. It can be monitored better when doing face to face meeting. Thus, it is better to do assessment face to face so that the researcher can get a better result, can control the movement of the study, and can clearly coach the participants about the techniques to be used in this study.

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