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Exercise Benefits and Barriers Perceived by Non-Exercising Physiotherapy Students

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***Abstract*: This paper presents the exercise benefits and barriers perceived by non-exercising physiotherapy students.**

***Keywords*: Benefits, Barriers, Motivation, Non-exercising, Perception, Physiotherapy students, Physical activity.**

1. Introduction

Physical activity (PA) cannot be separated from the practice of physiotherapy. For decades physiotherapists have been using PA and exercise to treat a range of conditions that include neuromuscular diseases, respiratory, orthopedic, pediatric, noncommunicable diseases (NCDs) and others. Today, NCDs have been noted to be the leading cause of death globally, reported to reach epidemic proportions and resulting in more deaths than all other causes combined. Physical inactivity is the fourth leading risk factor for global mortality contributing to 6% of deaths globally. Notably, one in four adults worldwide engages in insufficient PA. However, it is estimated that 31% of adults worldwide are physically inactive. The World Health Organization (WHO) reported that inactivity has become widespread, and about 3.2 million deaths per year are associated with physical inactivity. For this reason, physical inactivity has also been defined as a global public health problem. Therefore, increasing physical activity is among the priorities for public health worldwide. It is reported that in South Africa, one in two adults engages in insufficient PA. Furthermore, cardiovascular diseases are responsible for a third of deaths in the population globally; out of those deaths, 7.22 million are attributed to coronary heart disease (CHD). Not only do NCDs contribute to mortality, but they also contribute to morbidity placing a burden of care on society [1]. The benefits of regular physical activity (PA) for physiological and psychological health are well documented [2]. Physical activity prevents many chronic diseases and improves both physical and psychological health [3]. However, it is estimated that 31% of adults worldwide are physically inactive [4]. According ACSM non exercising is said to be an individual accumulating vigorous activity of less than or equal to 30 mins on most days over a week [5]. There is an ever-growing body of literature to support physiotherapists promoting the use of exercise and PA to successfully prevent and treat NCDs such as diabetes, cardiovascular disease, cancer, chronic lung disease, arthritis, liver disease, stroke, Alzheimer's disease and others [6], [7]. Of course, the epidemiological literature has not only affected the practice of physiotherapy, but has also influenced the physiotherapy curriculum and the competencies that are needed to effectively address these 21st-century health challenges [7], [8]. For instance, although physiotherapy curriculum worldwide emphasizes the role of exercise and PA to 2 optimize health, prevent illness and the use of exercise as a treatment technique, whether students are expected to engage in PA outside of the learning hours as part of their undergraduate training is unclear. Theoretical knowledge about the benefits of PA and the methods of prescribing are fundamental during undergraduate training [9]. However, engaging in PA and exercise itself is beneficial for students to gain knowledge and facilitate learning while developing insights into the future challenges that they will face when implementing strategic health promotion in practice [10], [11]. Physical activity habit is generally developed during childhood and young adulthood. It has been reported that there is a significant decrease in the physical activity level of students in the transition from high school to university [12]. The university period is precious for the development of physical activity habits, as it is a period when individuals start to make their own decisions and however, it is not yet clear which motivating factors lack inactive students and encourage exercise in physically active students [24] develop lifelong habits according to their preferences [13]. The studies conducted in many different countries have shown that university students' physical activity levels are generally low [13]-[18]. Many studies among university students have shown that there are many different barriers to exercise, primarily the lack of time, lack of motivation, and tiredness [14]-[23] Physiotherapists have been identified as key role players in health promotion, improving the health and well-being of communities by functioning both as role models and facilitators of behavior change consistent with public health priorities [25]-[27]. As key role players engaged in PA promotion, it is valuable to investigate the health behaviors of physiotherapists and physiotherapy students alike. There is a paucity of information on the level of PA of physiotherapists and physiotherapy students, making it difficult to predict their

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effectiveness as role models and the effectiveness of the health-promotion strategies they use [1]. One of the crucial components for success in achieving behavior change for health promotion is for the prescriber to engage in the target behavior, that is, PA [10]. The majority of patients will not start to engage in PA simply because it is advised [28]. Achieving a change 3 in behavior requires the physiotherapist to engage with the patient's beliefs and help in overcoming barriers to PA while also successfully modelling the behavior change [7], [10]. Understanding why individuals do not participate in sufficient PA is complex and multifaceted encompassing personal, interpersonal, environmental, and policy determinants. Research which advances our understanding of any of these factors has strong potential to better inform PA promotion interventions and thus support positive public health outcomes, both physiological and psychological [29]. The present article is based on the theoretical postulates of Nola Pender, who states that "the characteristics and individual experiences, as well as the knowledge and specific affections of the behavior, lead the individual to participate or not in healthy behaviors" [30], [31]. These experiences make people think that a specific behavior (in this case, physical activity) bring with it benefits and barriers that must be assessed so that the individual can make the decision of assuming it as a condition of personal care that could guarantee his/ her well-being [32]. The perceived benefits and barriers to exercise are considered as important mediators of PA behavior change [33]. Given the key roles of exercise and PA as treatment tools in both the prevention and treatment of health conditions, and the value of physiotherapists being actively engaged in exercise to facilitate health behavior change [1]. This study aimed to explore the benefits and barriers to exercise for undergraduate physiotherapy students.

A. Objective

1) Research Question

- What are the Benefits and Barriers perceived by students for Physical Activity?

2) Objective of the study:

- To find out the student's general levels of perceived benefits and barriers to exercise.
- To assess whether non-exercising Physiotherapy Students had greater total perceived benefits/ barriers to exercise.
- To identify what non-exercising physiotherapy students perceived to be the biggest benefits to exercise.
- To identify what non-exercising physiotherapy students perceived to be the biggest barriers to exercise.

3) Hypothesis

Null Hypothesis (H_0):

The Physiotherapy Students has no adequate perception of Physical Performance and Life Enhancement benefits of physical activity.

The Physiotherapy Students has no adequate perception of barriers to physical activity.

Alternate Hypothesis (H_1):

The Physiotherapy Students has adequate perception of Physical Performance and Life Enhancement benefits of physical activity.

The Physiotherapy Students has adequate perception of barriers to physical activity.

B. Methodology

1. Sources of data: Physiotherapy Students of Ambedkar College of Physiotherapy.
2. Study design: Cross-sectional study.
3. Study setting: Non-exercising physiotherapy.
4. Sample size: 200 subjects.
5. Sampling method: Convenient sampling.
6. Outcome measures: Demographic questionnaire (DQ), Exercise Benefits and Barriers Scale (EBBS).
7. Inclusion criteria:
   - Non- Exercising Physiotherapy Students Aged between 18-25 years.
   - Students who accumulate less than or 30 minutes of moderately vigorous exercise in 4-5 days a week
8. Exclusion criteria:
   - Physiotherapy students who are not willing to participate.
   - Students with existing ailments affecting their ability to exercise.

C. Procedure

200 healthy subjects were included in the study with age group between 18-25years after obtaining the consent from the subjects. Each subject was screened for and excluded if the subject had not met the inclusion criteria, then the purpose of the study was explained to the subjects. A self- administered questionnaire (google form) was sent to the subjects through different social media platforms. 200 subjects had completed the study.

D. Data Analysis

- Statistical analysis of the data was be performed using SPSS20.0(IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp).
- Descriptive statistics were expressed using mean and standard deviation. Paired test and Karl-Pearson's coefficient of correlation were used in the analysis.
- A p value <0.05 was considered statistically significant.

2. Discussion

Adequate PA has a critical bearing on wellbeing and quality of life. University contexts present key opportunities to promote PA behavior in young adult populations e.g., physiotherapy students. However, there is lack of information regarding attitudes toward exercise of physiotherapy students who do not achieve PA sufficient for health benefits. This restricts the design of effective and specialized PA promotion programmes. The present study examined the perceived exercise benefit and

barrier intensities of non-exercising physiotherapy students studying in Dr. Ambedkar College of Physiotherapy India. In connection with the first objective, the sample's being Physiotherapy students their general levels of perception to exercise generally indicated that participants either 'agreed' or almost 'strongly agreed' with most of the benefits items, while disagree or at best approaching agreement with the barrier items. This suggested that our sample of physiotherapy students perceived higher levels of benefits from exercise than barriers to exercise. For the benefits, participants agreed the least with 'Exercise is good entertainment for me', while agreeing the most with 'My physical endurance is improved by exercising'. For the barriers, participants agreed the most with 'Exercise tires me', 'I am fatigued by exercise', closely followed by 'Exercise is hard work for me' conversely, the strongest disagreement was with the barriers 'My family members do not encourage me to exercise', 'My spouse does not encourage exercising', and 'I think people in exercise clothes look funny'. As regards the second objective of this study, their perceived benefits were significantly greater than the perceived barriers to exercise. In relation to our third objective, for these non-exercising physiotherapy students, the strongest perceived benefit from exercising was in 'Physical performance' Sub-scale. This was followed by 'Life Enhancement' Sub-scale and 'Preventive health' Sub-scale, while 'Social Interaction' Sub-scale and 'Psychological Outlook' Sub-scale benefits were notably lower. The finding that physical performance (encompassing multiple health aspects e.g., fitness, stamina, muscle tone, and physical appearance) was the highest perceived benefit from exercise, is not surprising as the physiotherapy students understand the importance of such qualities.

In terms of the fourth objective, sample felt that family discouragement was the least barrier to exercise. This finding might be expected, as the sample are students and still single. It was also encouraging to find that exercise milieu and time expenditure presented as a meaningful barrier to exercise although significantly less than physical exertion. The limited perception of time expenditure as a barrier to exercise is positive as it reflects potential time to exercise. The participants' perceptions that the availability of time as a barrier to exercise might be due to their education or possibly due to scheduled university classes. Physical exertion was the largest perceived barrier to exercise. Our sample's perception that the major barrier to exercise was that PA is fatiguing and hard work is of great concern. A vicious circle could be initiated: as students lose (regress) in their physical fitness condition, they could perceive that subsequent PA will usually be even harder. This in turn reinforces physical exertion as a barrier to exercise thus reducing their activity and in turn their physical fitness condition

With regard to the fifth objective, many of the barrier subscales were significantly and negatively associated with individual benefit subscales. The barrier of exercise milieu and

Table 1
Perceived benefits to exercise

Perceived Benefits to Exercise	**Mean**	**Std. Deviation**
Life Enhancement Sub-scale		
My disposition is improved by exercise	3.23	0.66
Exercising helps me sleep better at night	3.19	0.74
Exercise helps me decrease fatigue	3.10	0.73
Exercising improves my self-concept	3.17	0.70
Exercising increases my mental alertness	3.22	0.67
Exercise improves the quality of my work	3.12	0.72
Exercise allows me to carry out normal activities without becoming tired	3.21	0.74
Exercise improves overall body functioning for me	3.18	0.70
Physical performance Sub-scale		
Exercise increases my muscle strength	3.21	0.73
Exercising increases my level of physical fitness	3.19	0.77
My muscle tone is improved with exercise	3.15	0.75
Exercising improves functioning of my cardiovascular system	3.26	0.64
Exercise increases my stamina	3.25	0.75
Exercise improves my flexibility	3.21	0.72
My physical endurance is improved by exercising	3.27	0.65
Exercise improves the way my body looks	3.19	0.78
Psychological Outlook Sub-scale		
I enjoy exercise	3.01	0.76
Exercise decreases feelings of stress and tension for me	3.13	0.72
Exercise improves my mental health	3.13	0.72
Exercise gives me a sense of personal accomplishment	3.20	0.66
Exercising makes me feel relaxed	3.05	0.74
I have improved feelings of well-being from exercise	3.10	0.71
Social Interaction Sub-scale		
Exercising lets me have contact with friends and persons I enjoy	3.06	0.71
Exercising is a good way for me to meet new people	3.00	0.72
Exercise is good entertainment for me	2.90	0.77
Exercising increases my acceptance by others	3.02	0.71
Preventive Health Sub-scale		
It will prevent heart attacks by exercising	3.14	0.70
Exercising will keep me from having high blood pressure	3.19	0.72
I will live longer if I exercise	3.15	0.76

physical exertion was negatively associated with four of the benefit sub-scales. The interrelation of some, but not of all the barrier and benefit subscales demonstrated the complexity of the nature of these factors. Furthermore, these linkages show how interventions focusing on different barriers could also have a potential positive effect on related perceived benefits, e.g., the linkage between exercise milieu and physical exertion.

3. Result

Table 1 depicts the sample's means and standard deviations for each item of the benefits sub-scales. Generally, the sample of Physiotherapy students either agreed or strongly agreed with most of the benefits under examination, reflecting that they felt that many of the statements actually represented benefits of regular exercising. However, for some benefit items, the sample exhibited somewhat neutral scores (e.g., 'It will prevent heart attacks by exercising' 'I will live longer if I exercise' and, items of the Psychological Outlook Sub-scale); or scores that approached the "agree" option of the response scale (e.g., 'Exercising improves my self-concept' 'Exercising helps me sleep better at night' 'Exercising increases my level of physical fitness' 'Exercise improves my flexibility' and 'Exercise improves the way my body looks'). Participants agreed the least with 'Exercise is good entertainment for me', while agreeing the most with 'My physical endurance is improved by exercising'.

A. Life Enhancement Sub-scale

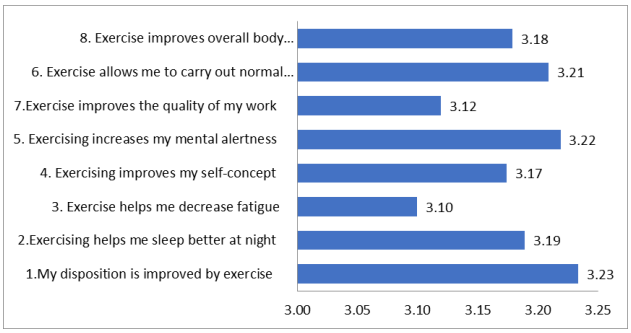

Fig. 1. Life enhancement sub-scale

Participants perceive a range of benefits: improved disposition (3.23 ± 0.66), better sleep quality (3.19 ± 0.74), decreased fatigue (3.10 ± 0.73), enhanced self-concept (3.17 ± 0.70), increased mental alertness (3.22 ± 0.67), improved ability to carry out daily activities without tiredness (3.21 ± 0.74), and overall body functioning (3.18 ± 0.70).

B. Physical Performance Sub-scale

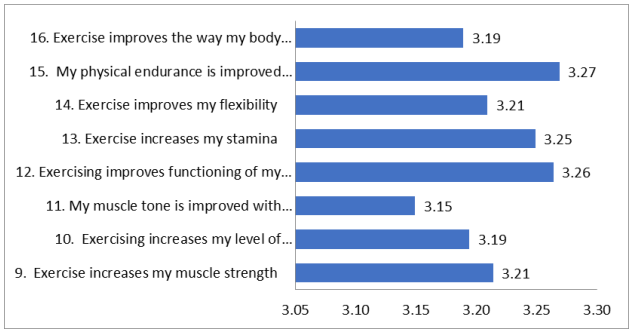

Fig. 2. Physical performance sub-scale

Participants perceive benefits such as increased muscle strength (3.21 ± 0.73), physical fitness level (3.19 ± 0.77), muscle tone (3.15 ± 0.75), cardiovascular functioning (3.26 ± 0.64), stamina (3.25 ± 0.75), flexibility (3.21 ± 0.72), physical endurance (3.27 ± 0.65), and body appearance (3.19 ± 0.78).

C. Psychological Outlook Sub-scale

Fig. 3. Psychological outlook sub-scale

Participants generally perceive benefits in enjoyment of exercise (3.01 ± 0.76), sense of personal accomplishment (3.20

Table 2
Perceived barriers to exercise

Perceived Barriers to Exercise	Mean	Std. Deviation
Exercise Milieu Sub-scale		
Places for me to exercise are too far away	2.46	0.88
I am too embarrassed to exercise	2.31	0.87
It costs too much money to exercise	2.38	0.88
Exercise facilities do not have convenient schedules for me	2.44	0.84
I think people in exercise clothes look funny	2.26	0.88
There are too few places for me to exercise	2.41	0.84
Time Expenditure Sub-scale		
Exercising takes too much of my time	2.46	0.76
Exercise takes too much time from family relationships	2.37	0.88
Exercise takes too much time from my family responsibilities	2.37	0.79
Physical Exertion Sub-scale		
Exercise tires me	2.58	0.80
I am fatigued by exercise	2.58	0.80
Exercise is hard work for me	2.54	0.86
Family Discouragement Sub-scale		
My spouse (or significant other) does not encourage exercising	2.24	0.84
My family members do not encourage me to exercise	2.23	0.92

± 0.66), improved mental health (3.13 ± 0.72), relaxation (3.05 ± 0.74), and overall well-being (3.10 ± 0.71). However, they perceive less benefit in terms of reducing stress and tension (3.13 ± 0.72).

D. Social Interaction Sub-scale

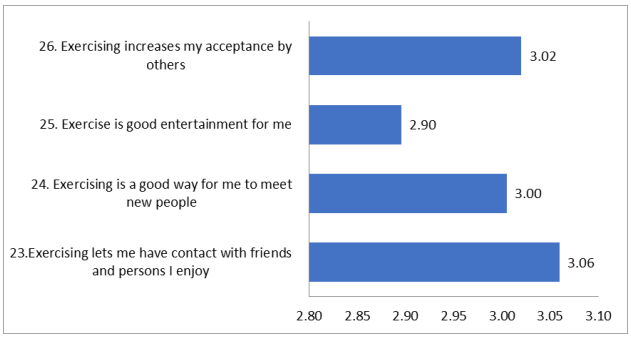

Fig. 4. Social interaction sub-scale

Participants perceive moderate benefits in using exercise for social interaction purposes, including contact with friends and meeting new people (3.06 ± 0.71), entertainment (2.90 ± 0.77), and increased acceptance by others (3.02 ± 0.71).

E. Preventive Health Sub-scale

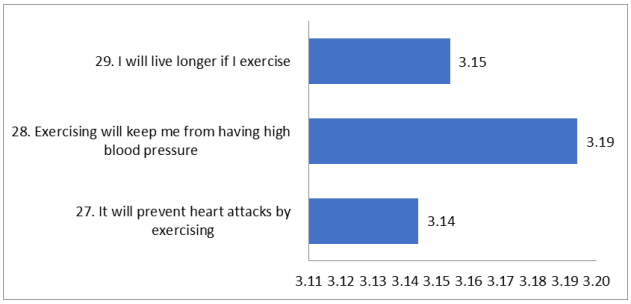

Fig. 5. Preventive health sub-scale

Participants perceive moderate benefits in terms of exercise's preventive health aspects, including preventing heart attacks (3.14 ± 0.70), high blood pressure (3.19 ± 0.72), and increasing longevity (3.15 ± 0.76).

Table 2 depicts the sample's means and standard deviations for each item of the barriers sub-scales. Generally, participants fairly agreed with many of the barrier items, reflecting that they felt that several of the statements actually represented barriers to their regular PA. However, for some barrier items, there was clear-cut disagreement indicating that statements do not represent barriers (e.g., 'My spouse does not encourage exercising', 'I think people in exercise clothes look funny'). Participants disagreed most with: 'My family members do not encourage me to exercise', while agreeing most with the items: 'Exercise tires me' and 'I am fatigued by exercise', closely followed by 'Exercise is hard work for me'.

F. Exercise Milieu Sub-scale

Fig. 6. Exercise milieu sub-scale

Participants perceive various barriers related to the exercise environment, including places being too far away (2.46 ± 0.88), feeling embarrassed to exercise (2.31 ± 0.87), cost being a barrier (2.38 ± 0.88), inconvenient schedules at exercise facilities (2.44 ± 0.84), feeling uncomfortable about people in exercise clothes (2.26 ± 0.88), and limited availability of exercise locations (2.41 ± 0.84).

G. Time Expenditure Sub-scale

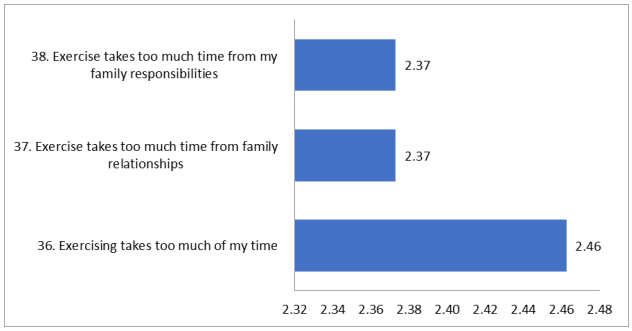

Fig. 7. Time expenditure

Participants perceive time-related barriers to exercise, such as exercise taking up too much time (2.46 ± 0.76), interfering with family relationships (2.37 ± 0.88), and conflicting with family responsibilities (2.37 ± 0.79).

Table 3
Standardized perceived benefit and barrier sub-scale means and standard deviations and t-test values for multiple comparisons

	Mean	**Std. Deviation**	**Life enhancement**	**Physical performance**	**Psychological outlook**	**Social interaction**	**Preventative health**
Life enhancement	3.18	0.52	–	1.50 (0.131)	2.61 (0.015*)	5.97 (p<0.001*)	0.36 (0.713)
Physical performance	3.22	0.55		–	3.71 (p<0.001*)	5.71 (p<0.001*)	1.53 (0.128)
Psychological outlook	3.11	0.53			–	4.4 (0.001*)	1.55 (0.121)
Social interaction	3.00	0.56				–	4.37 (p<0.001*)
Preventative health	3.16	0.58					–
			Exercise milieu	Time expenditure	Physical exertion	Family discouragement	
Exercise milieu	2.38	0.65	–	0.89 (0.379)	5.05 (p<0.001*)	3.06 (0.001*)	
Time expenditure	2.40	0.71		–	3.9 (p<0.001*)	3.6 (p<0.001*)	
Physical exertion	2.57	0.70			–	6.74 (p<0.001*)	
Family discouragement	2.24	0.79				–	

Table 4
Correlation coefficients between perceived barriers and benefits of exercise subscales

	Exercise milieu	Time expenditure	Physical exertion	Family discouragement
Life enhancement	-.215	-.253	-.129	-.161*
Physical performance	-.209	-.269	-.041	-.270
Psychological outlook	-.259	-.298	-.236	-.192
Social interaction	-.119	-.094	-.165*	-.050
Preventative health	-.134	-.184	-.054	-.137

H. Physical Exertion Sub-scale

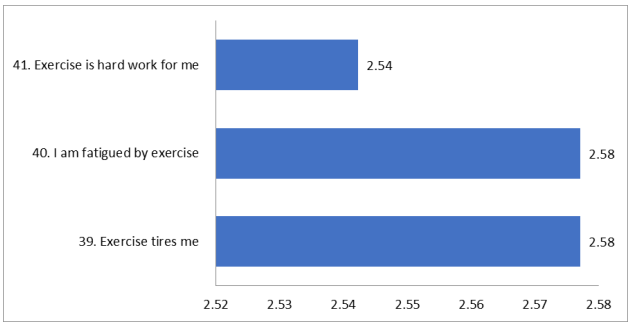

Fig. 8. Physical exertion

Participants perceive physical exertion-related barriers to exercise, including feeling tired (2.58 ± 0.80), experiencing fatigue (2.58 ± 0.80), and finding exercise to be hard work (2.54 ± 0.86).

I. Family Discouragement Sub-scale

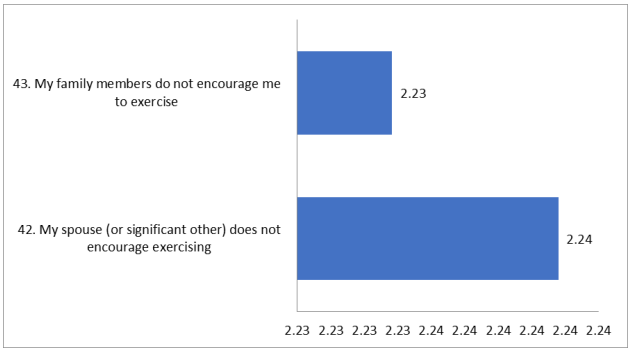

Fig. 9. Family discouragement

Participants perceive barriers related to family discouragement, such as lack of encouragement from spouse or significant other (2.24 ± 0.84) and lack of encouragement from other family members (2.23 ± 0.92).

Overall, the mean ± SD values indicate that participants perceive various barriers to exercise, including environmental, time-related, physical exertion-related, and familial factors. These barriers may influence their exercise behaviour.

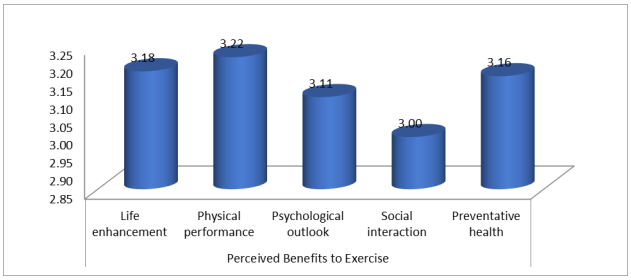

Fig. 10. Mean of perceived benefits to exercise

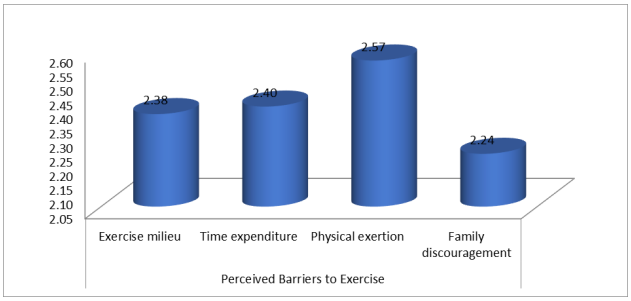

Fig. 11. Perceived barriers to exercise

1) Life Enhancement

Exercise milieu: There is a statistically significant negative correlation ($r = -0.215$, $p < 0.01$) between perceived barriers related to exercise environment and perceived benefits in life.

Time expenditure: There is a statistically significant negative correlation ($r = -0.253$, $p < 0.01$) between perceived barriers related to time constraints and perceived benefits in life enhancement.

Physical exertion: There is a weak negative correlation ($r = -0.129$, $p > 0.05$) between perceived barriers related to physical and perceived benefits in life enhancement.

Family discouragement: There is a statistically significant negative correlation ($r = -0.161$, $p < 0.05$) between perceived barriers related to family discouragement and perceived benefits in life enhancement.

2) Physical Performance

Exercise milieu: There is a statistically significant negative correlation ($r = -0.209$, $p < 0.01$) between perceived barriers related to exercise environment and perceived benefits in physical performance.

Time expenditure: There is a statistically significant negative correlation ($r = -0.269$, $p < 0.01$) between perceived barriers related to time constraints and perceived benefits in physical performance.

Physical exertion: There is a weak negative correlation ($r = -0.041$, $p > 0.05$) between perceived barriers related to physical exertion and perceived benefits in physical performance.

Family discouragement: There is a statistically significant negative correlation ($r = -0.270$, $p < 0.01$) between perceived barriers related to family discouragement and perceived benefits in physical performance.

3) Psychological Outlook

Exercise milieu: There is a statistically significant negative correlation ($r = -0.259$, $p < 0.01$) between perceived barriers related to exercise environment and perceived benefits in psychological outlook

Time expenditure: There is a statistically significant negative correlation ($r = -0.298$, $p < 0.01$) between perceived barriers related to time constraints and perceived benefits in

psychological outlook.

Physical exertion: There is a statistically significant negative correlation ($r = -0.236$, $p < 0.01$) between perceived barriers related to physical exertion and perceived benefits in psychological outlook.

Family discouragement: There is a weak negative correlation ($r = -0.192$, $p < 0.05$) between perceived barriers related to family discouragement and perceived benefits in psychological outlook.

4) Social Interaction

Exercise milieu: There is no statistically significant correlation ($r = -0.119$, $p > 0.05$) between perceived barriers related to exercise environment and perceived benefits in social interaction.

Time expenditure: There is no statistically significant correlation ($r = -0.094$, $p > 0.05$) between perceived barriers related to time constraints and perceived benefits in social interaction.

Physical exertion: There is a weak negative correlation ($r = -0.165$, $p < 0.05$) between perceived barriers related to physical exertion and perceived benefits in social interaction.

Family discouragement: There is no statistically significant correlation ($r = -0.050$, $p > 0.05$) between perceived barriers related to family discouragement and perceived benefits in social interaction.

5) Preventative Health

Exercise milieu: There is no statistically significant correlation ($r = -0.134$, $p > 0.05$) between perceived barriers related to exercise environment and perceived benefits in preventive health

Time expenditure: There is a statistically significant negative correlation ($r = -0.184$, $p < 0.01$) between perceived barriers related to time constraints and perceived benefits in preventive health.

Physical exertion: There is no statistically significant correlation ($r = -0.054$, $p > 0.05$) between perceived barriers related to physical exertion and perceived benefits in preventive health.

Family discouragement: There is no statistically significant correlation ($r = -0.137$, $p > 0.05$) between perceived barriers related to family discouragement and perceived benefits in preventive health.

4. Conclusion

Physiotherapy Students of Dr. B.R Ambedkar College of Physiotherapy give higher importance to their perception of Physical Performance and Life Enhancement benefits that may lead them to do physical activity. The physical activity participation of Physiotherapy students can be encouraged by increasing their knowledge and perception of the benefits of exercises and by decreasing the barriers that they felt. Therefore, this study's results may contribute to planning interventions and strategies aiming to promote physical activity participation and its importance.

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