

# Correlation of Level of Physical Activity with Weight Perception, Body Mass Index and Body Image Dissatisfaction among Physiotherapy Students of Government Tertiary Care Hospital

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## Abstract

**Background** - Obesity has been increasing steadily and is one of the major cause of many non-communicable diseases among young population. Physiotherapy profession revolves around health and fitness and thus physiotherapy students were chosen for the study. The aim of the study is to find correlation of levels of physical activity with weight perception, body mass index and body image dissatisfaction among physiotherapy students of government tertiary care hospital.

**Method**- It was an observational, cross sectional study of 68 physiotherapy students of either gender between the age of 18-25 years. Perceived weight was documented, body mass index calculated and questionnaires were used to score body image dissatisfaction and physical activity.

**Conclusion**-We found no correlation between level of physical activity and weight perception( $p>0.05$ ) and between level of physical activity and Body Image Dissatisfaction ( $p>0.05$ ). However, there was a correlation between level of physical activity and Body Mass Index with  $p\leq 0.05$ ,  $\rho=0.281$ . The result highlights the importance of increasing awareness towards self-acceptance of body image and focus on physical activity.

**Keywords:** Body Image Dissatisfaction, Body Mass Index, Physical activity, Physiotherapy students, Weight perception.

## Introduction

Obesity has been progressively increasing despite the increased frequency of weight concerns and

weight management techniques among the youthful population. It is a substantial contributor to a variety of non-communicable diseases. Weight management practices are triggered by body weight perception, according to studies. Weight perception is a subjective assessment of one's weight, regardless of reality<sup>[1]</sup> and depends on a variety of factors like gender, family, society, etc. One of the tools to screen for weight categories is Body Mass Index. It may indicate a risk for health problems, calculated as weight / height<sup>2</sup>.

Body image refers to how someone perceives, thinks and feels regarding their body and appearance.

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This perception could be positive or negative and is greatly influenced by sociodemographic and environmental factors. Studies have demonstrated that body image dissatisfaction occurring in late childhood and adolescence is associated with increased negative effect [2] Body image dissatisfaction can be defined as the negative attitude towards one's own body ensuing from a perceived discrepancy between the actual body image and the ideal body image [3] It tends to differ from person to person. An obese woman could perceive herself as obese and make attempts to lose weight or she could perceive herself as normal and make no changes in her diet and routine.

A key to health and weight management is correct self-weight perception and body satisfaction. [4] According to a study, university students are more concerned about body image. [5] It is usually over or underestimated due to various factors like social pressure, peer pressure, etc. Exploring an individual's perception of his/her weight status and relating that perception to his/her real body weight can help in determining unrealistic views on body image. [4]

University students particularly medical students are at a risk for weight gain because of changed lifestyle and eating habits. [6]

Physiotherapy students are expected to have a good knowledge about physical activity and related health benefits. They can be considered as health advocates to promote and prescribe exercise to patients and the general public. [7] Therefore physiotherapy students were chosen for the study.

Study done by Hadia Radwan *et al* [4] on 308 university students between the age of 18-25 year-old showed that majority of the participants (81%) were dissatisfied with their body image. Females desired to lose weight and preferred diet to exercise, while males desired to gain weight and preferred exercise to diet. There was a strong correlation ( $r^2 =$

0.84,  $p < 0.001$ ) between perceived BMI and actual BMI. Actual BMI showed a strong correlation with the BID ( $r^2 = 0.57$ ,  $p < 0.001$ ). Another study by D Priya *et al* [8] where 147 female students of MBBS ladies hostel were included, most of them perceived their image correctly regarding to their weight. Most of the underweight and all overweight females were not satisfied. Underweight females preferred to gain weight and overweight females preferred to lose weight. Some of the subjects skipped meals to lose weight.

Therefore, we thought of doing this study to find correlation of levels of physical activity with weight perception, body mass index and body image dissatisfaction among undergraduate and postgraduate physiotherapy students of government tertiary care hospital.

## Materials and Method

This was an observational, cross sectional study of 6 months, one-time assessment, with each session of around 20 minutes. It was an all-inclusive, convenience sampling with a total population of 68 students. Total number of physiotherapy students admitted at our physiotherapy school were  $75 \pm 5\%$  dropout rate which is 68. This included 18-25 year-old undergraduate and postgraduate physiotherapy students of both genders.

Participants were recruited in the study after taking written informed consent post the Department Review Board approval [DRB(PT) 2021/16]. Demographic data and perceived weight was recorded. Height and weight was measured and Body Mass Index calculated using the same. Body Image Dissatisfaction score was calculated using Figure Rating Scale. International Physical Activity Questionnaire was filled by the participants and physical activity was calculated.

The outcome measures used in the study were:

**Body Mass Index** <sup>[10]</sup>: This categorizes a person as underweight (BMI<18.5), normal (BMI 18.5-22.9), overweight (BMI 23-24.9), obese I (BMI 25-29.9) and obese II (BMI >30). It is calculated as Weight(kg)/Height(m)<sup>2</sup>. The BMI scale for Asian population was used for the study.

**Figure Rating Scale** <sup>[11]</sup>: Stunkard Figure Rating Scale was used for the study. It consists of 9 silhouettes ranging from very thin (value of 1) to very obese (value of 9). The participant was asked to select a figure of how he/she perceived their current body shape and another figure as to how they desire to be. A difference of score between perceived body image and ideal body image gave us the value of dissatisfaction. If it was  $\geq 1$ , the participant wanted to be thinner. If it was  $< 1$ , he desired to be heavier whereas a score of 0 indicated no dissatisfaction.

**International Physical Activity Questionnaire (IPAQ)** <sup>[12]</sup>: IPAQ is an international measure for

physical activity in the last 7 days. It consists of a set of 5 domains. These domains include job related physical activity, transportation physical activity, housework and caring for family, recreation and time spent sitting. The assessment was based on the intensity of physical activity categorized as vigorous, moderate and just normal walking. The level of physical activity is classified as low (MET 3.3), moderate (MET 4) and vigorous (MET 8).

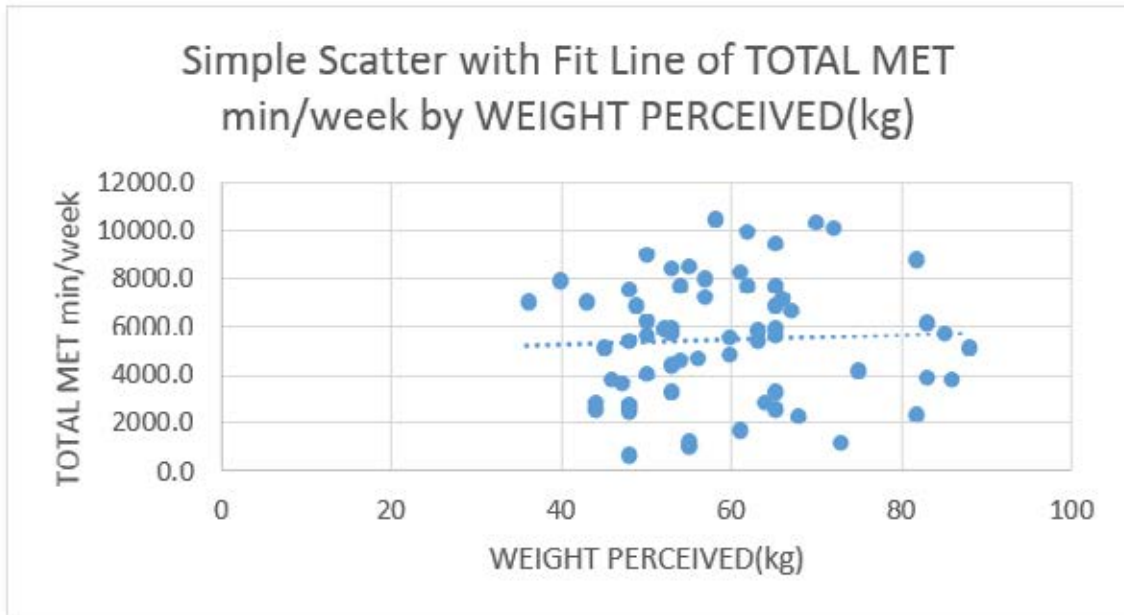
### Data Analysis

The data was analyzed using Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics including frequency, percentage, mean and standard deviation was used to analyze the study population. Spearman's Test was used to study the relationships between the variables. Differences were considered significant at  $p < 0.05$

## Results and Discussion

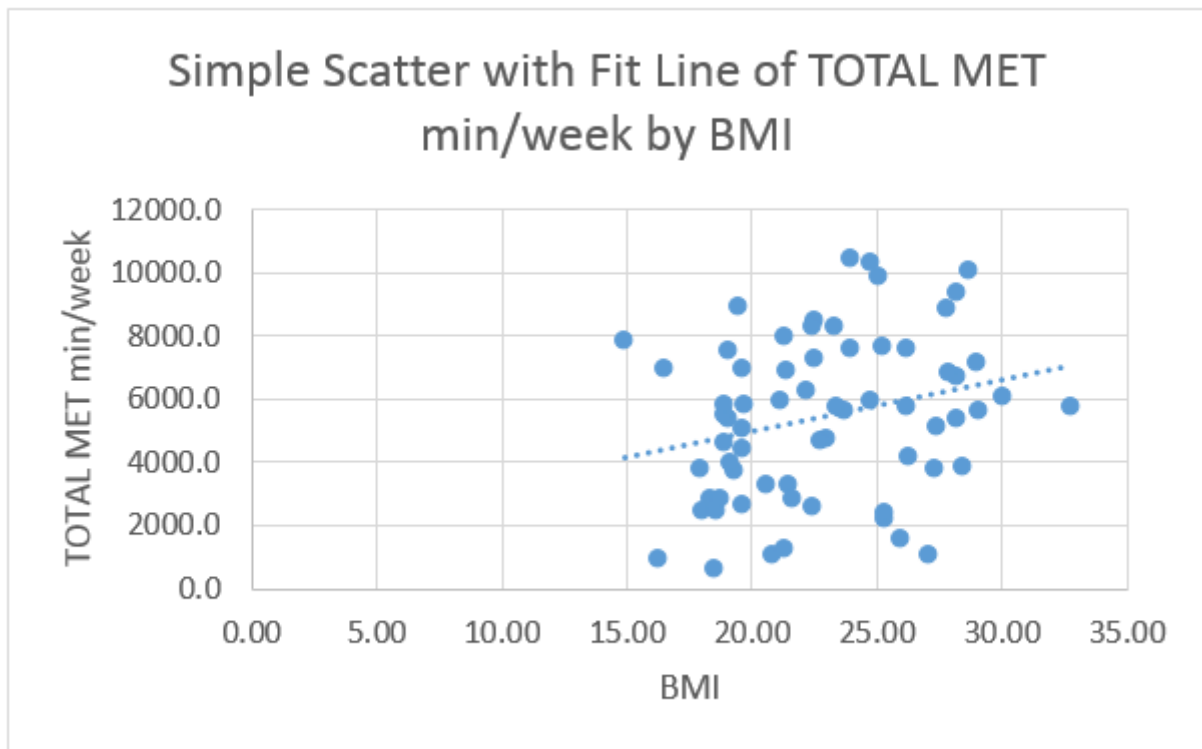
**TABLE 1: Correlation of Total MET min/week with weight perceived, Body Mass Index and Body Image Dissatisfaction:**

		Weight perceived (kg)	Body Mass Index (kg/m <sup>2</sup> )	Body Image Dissatisfaction
Total MET min/week	Correlation coefficient	0.088	0.281	0.163
	Sig.(2 tailed)	0.48	0.022	0.192
	N	66	66	66



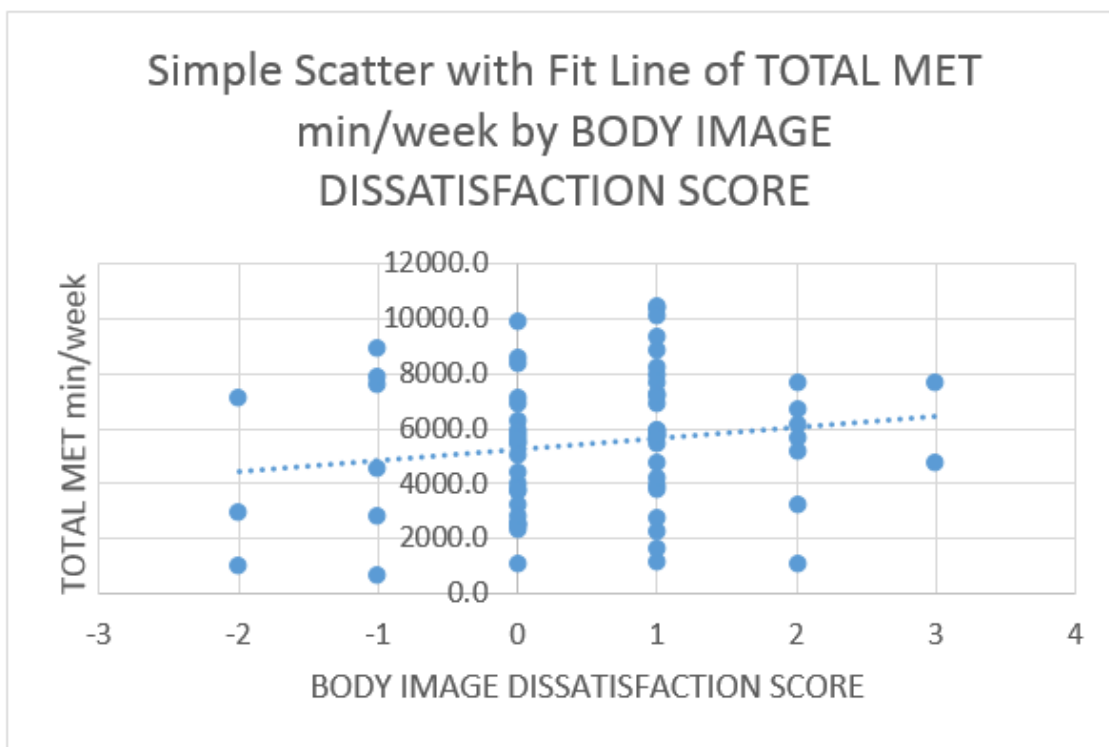
**GRAPH 1: Correlation of level of physical activity with weight perceived:**

The graph shows no correlation between level of physical activity and weight perception. ( $p > 0.05$ ,  $\rho = 0.088$ )



**GRAPH 2: Correlation between level of physical activity and Body Mass Index:**

The graph shows a correlation between level of physical activity and Body Mass Index with  $p \leq 0.05$ ,  $\rho = 0.281$ .



**GRAPH 3: Correlation between level of physical activity and Body Image Dissatisfaction score:**

The graph shows no correlation between level of physical activity and Body Image Dissatisfaction score ( $p > 0.05$ ,  $\rho = 0.163$ )

The students selected for our study were undergraduate and postgraduate students of a government tertiary care hospital. A total of 68 physiotherapy students aged 18-25 years (mean age  $22 \pm 1.62$  years) participated in the study. 66 students have been included and 2 have been excluded from the study. This included 54 (81.8%) females and 12 (18.2%) males. 24 (35.29%) students overestimated their perceived weight, 37 (54.41%) students underestimated their perceived weight and 7 (10.29%) students perceived their weight accurately. 45 (66.17%) students of the 66 were dissatisfied with their body image: 9 (13.23%) desired to be heavier and 36 (52.94%) desired to be thinner. 30 (45.45%) students

had normal BMI, 7 (10.60%) were underweight, 7 (10.60%) were overweight, 20 (30.30%) belonged to Obese I category and 2 (3.03%) to Obese II category.

Almost all students (97.05%) were physically active with a mean MET min/week of  $5444 \pm 2543$ . 60 (90.90%) students had moderate physical activity in their routine (mean total moderate MET min/week  $2601 \pm 2005.6$ ) while 30 (45.45%) of these also had vigorous physical activity included. (mean total vigorous MET min/week  $324 \pm 610.25$ )

Majority of the participant's physical activity was contributed solely by walking, majorly contributed by work domain in the questionnaire.

We found no correlation between perceived weight and physical activity [Graph 1] like a previous study by Tawima Sirirassamee *et al* [13] that says

the evidence for how weight perception relates to weight-related behavior is mixed. Some studies have shown that adolescents who perceive themselves as overweight are more likely to report using exercise or diet as weight management ways than those who do not perceive themselves as overweight <sup>[14]</sup> A different study has shown that the perception of being overweight is related to lower physical activity or unhealthy food consumption <sup>[15]</sup> and a few have found no relationship.

There was a correlation between body mass index and physical activity [Graph 2] that was previously studied by Hadia Radwan *et al.* <sup>[4]</sup>

No correlation was found between Body image dissatisfaction and physical activity [Graph 3]. Caspersen *et al.* <sup>[16]</sup> defined physical activity as any bodily movement produced by skeletal muscles that results in energy expenditure. In daily life it is categorized into occupational, sports, conditioning, household, or other activities. On the other hand, exercise is a subcategory of physical activity. It is a physical activity that is planned, structured, repetitive, and intentional, in the sense that improvement or maintenance of one or more components of physical fitness is an objective. The IPAQ is a measure of total physical activity. In developing countries, occupational and transportation activities represent a considerable proportion of total physical activity. Thus, most of the participants possibly follow this sort of activity, and not specifically “exercise.” This might be one explanation for the lacking relationship between physical activity and body image disturbance.

The current study highlights the rate of body image dissatisfaction among young population of physiotherapy students. Dissatisfaction has been connected to negative effects according to a study. <sup>[2]</sup> There must be an increase in awareness towards self-acceptance of body image.

## Conclusion

Our study did not show any correlation between level of physical activity and weight perception and between level of physical activity and body image dissatisfaction. However, there was a correlation between level of physical activity and Body Mass Index.

Our study was done on a small sample size and was a single- centre study.

**Ethical Clearance-** Taken from Department Review Board Committee

**Source of Funding** –Self

**Conflict of Interest** - Nil

## References

1. Bhurtun D, Jeewon R , Body Weight Perception and Weight Control Practices among Teenagers *International Scholarly Research Notices*,2013 **vol 2013**, Article ID 395125, 6 pages
2. Heider, N., Spruyt, A. and De Houwer, J. Body Dissatisfaction Revisited: On the Importance of Implicit Beliefs about Actual and Ideal Body Image. *Psychologica Belgica*,2018 **57(4)**, pp.158–173.
3. Azmira Ab. Latiff, Juliawati Muhamad, Razlina A. Rahman: Body image dissatisfaction and its determinants among young primary-school adolescents, *Journal of Taibah University Medical Sciences*,2018 **Vol 13**, Issue 1, Pages 34-41, ISSN 1658-3612,
4. Radwan H, Hasan HA, Ismat H, Hakim H, Khalid H, Al-Fityani L, Mohammed R, Ayman A. Body Mass Index Perception, Body Image Dissatisfaction and Their Relations with Weight-Related Behaviors among University

- Students. *Int. J. Environ. Res. Public Health*, 2019, **16(9)**, 1541
5. Deforche, B., Van Dyck, D., Deliens, T. *et al* Changes in weight, physical activity, sedentary behaviour and dietary intake during the transition to higher education: a prospective study. *Int J Behav Nutr Phys Act* 2015 vol **12**, 16
  6. Anupama M., Krishna Iyengar, Rajesh S S, Rajanna M S.A study on prevalence of obesity and life-style behaviour among medical students. August International Journal of Community Medicine and Public Health 2017 **4(9)**:3314
  7. Ranasinghe C, Sigera C, Ranasinghe P, Jayawardena R, Ranasinghe AC, Hills AP, King N. Physical inactivity among physiotherapy undergraduates: exploring the knowledge-practice gap. *BMC Sports Sci Med Rehabil.*, 2016 7;8:39. doi: 10.1186/s13102-016-0063-8. PMID: 27980791; PMCID: PMC5142393.
  8. D Priya, K S Prasanna, S Sucharitha, Nafisa C Vaz: Body Image perception and attempts to change weight among female medical students at Mangalore, *Indian Journal of Community Medicine*, 2010 vol **35**, pg 316-320
  9. Vijayalakshmi P, Thimmaiah R, Reddy SSN, Kathyayani BV, Gandhi S, Math SB: Gender Differences in Body Mass Index, Body Weight Perception, weight satisfaction, disordered eating and Weight control strategies among Indian Medical and Nursing Undergraduates. *Invest. Educ. Enferm.* 2017, **35(3)**:276-284
  10. Vivien Choo: WHO reassesses appropriate body mass index for Asian population *The Lancet*, 2002, vol **360**, issue 9328, p235
  11. Lo, W. S., Ho, S. Y., Mak, K. K., & Lam, T. H. The use of Stunkard's figure rating scale to identify underweight and overweight in Chinese adolescents. *PloS one*, 2012, **7(11)**, e50017.
  12. International Physical Activity Questionnaire Hagströmer M, Oja P, Sjörström M, The International Physical Activity Questionnaire (IPAQ): a study of concurrent and construct validity. *Public Health Nutr.* 2006, **9(6)**:755-62. doi: 10.1079/phn2005898. PMID: 16925881.
  13. Sirirassamee, T., Phoolsawat, S., & Limkhunthammo, S. Relationship between body weight perception and weight-related behaviors. *The Journal of international medical research*, 2018, **46(9)**, 3796–3808.
  14. Laus M & Costa T & Almeida S. Body image dissatisfaction and its relationship with physical activity and body mass index in Brazilian adolescents. *Jornal brasileiro de psiquiatria.*, 2011, **60**. 315-20. 10.1590/S0047-20852011000400013.
  15. Frank R, Claumann GS, Felden ÉP, et al. Body weight perception and body weight control behaviors in adolescents. *J Pediatr (Rio J)*; 2018,**94**: 40–47.
  16. Caspersen, C. J., Powell, K. E., & Christenson, G. M. Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public health reports (Washington, D.C. : 1974)*, 1985, **100(2)**, 126–131.