Assessment of Level of Physical Activity in Physiotherapy Students

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Abstract

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical inactivity has been identified as the fourth leading risk factor for mortality causing an estimated 3.2 million deaths globally. Regular moderate-intensity physical activity – such as walking, cycling, or participating in sports – has significant benefits for health.

The purpose of this study was to assess the level of physical activity in physiotherapy students aged between 18 and 25 years. The assessment was conducted in 450 physiotherapy students. It included undergraduate as well as postgraduate students. International Physical Activity Questionnaire Short (IPAQ-SF) was used to assess the students. MET values of various physical activities during the previous week of respective students were calculated. Post assessment, their respective physical activity levels were calculated and quantified into inactive, moderately active, or HEPA active respectively. The physical activity level in students was further quantified with respect to their BMI levels. According to the study, 39% students were inactive, 50% moderately active, and 11% were HEPA active.

Keywords: Physical activity, MET, International Physical Activity Questionnaire Short (IPAQ), Inactive, Moderately active, HEPA active, BMI

Introduction

The World Health Organisation (WHO) reports that 60% of the world’s population fails to comply with WHO requirements for recommended physical activity, thus leading to a sedentary lifestyle. This is one of important risk factors in ischemic heart disease, excessive weight, and obesity.

In 2010, the WHO published that exercise of moderate intensity should be conducted for at least 150 minutes per week. Alternatively, intense exercise should be conducted for 75 mins per week.

Benefits of these recommendations include improvements in muscle activity, respiration, and blood circulation plus the effect of reducing the risk of falling ill with non-infectious chronic illness and depression.1

Physical activity/exercise is examined as primary prevention against 35 chronic conditions [Accelerated biological aging/ premature death, low cardiorespiratory fitness (VO2max), sarcopenia, metabolic syndrome, obesity, insulin resistance, prediabetes, type 2 diabetes, non-alcoholic fatty liver disease, coronary heart disease, peripheral artery disease, hypertension, stroke, congestive heart failure, endothelial dysfunction, arterial dyslipidemia, hemostasis, deep vein thrombosis, cognitive dysfunction, depression and anxiety, osteoporosis, osteoarthritis, balance, bone fracture/ falls, rheumatoid arthritis, colon cancer, breast cancer, endometrial cancer, gestational diabetes, polycystic ovary syndrome, erectile dysfunction, pain, diverticulitis, constipation, and gallbladder diseases].2

One way of expressing the level of physical activity is the International Physical Activity Questionnaire (IPAQ) test.3

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Within an activity offered for classification:

- Intensity level that averages 600 MET-min/week determines moderate level of physical activity for the given person.
- Intensity level that averages 3000 MET-min/week determines high level of physical activity.
- Intensity level that averages less than 600 MET-min/week determines low levels of physical activity.

Monitoring of the level of physical activity as determined by the MET-min/week is measured along with the international physical activity questionnaire (IPAQ). The purpose of this work with MET-min/week was to measure the total physical activity (vigorous intensity, moderate intensity, and walking) according to the recommendation of WHO. The results of International IPAQ test are broadly relevant to a wide range of countries as the content validity of IPAQ test is high because frequency, intensity and duration of physical activity are assessed as well as sedentary behavior which is an emerging concern.

**Materials and Methods**

This was a cross-sectional study and data collection was done with the help of International Physical Activity Questionnaire Short (IPAQ-SF). Study setting was chosen as D.Y. Patil University, School of Physiotherapy, Navi Mumbai, Nerul. Sample size was opted as 450 students, which included undergraduate as well as postgraduate students between the age group 18 and 25 years. The MET values of respective students were calculated, and on this basis they were quantified into inactive, moderate active, or HEPA active. BMI levels were then related with the physical activity levels and compared.

**Results and Discussion**

In the study conducted, out of 450 physiotherapy students, 48 subjects were male while 402 were female. According to WHO, physical activity needs to achieve at least 1200 MET-min/week. The average MET value of 450 students thus conducted is 1987.28 MET-min/week which meets the criteria set by WHO.
Table 1. Vigorous Activity Analysis with respect to BMI Level

| BMI Analysis   | Normal | Obese | Overweight | Underweight |
|----------------|--------|-------|------------|-------------|
| No. of subjects| 84     | 18    | 20         | 16          |
| Percentage (%) | 58     | 18    | 15         | 9           |

Figure 4. Moderate Physical Activity Analysis with respect to BMI

Table 2

| BMI Analysis   | Normal | Obese | Overweight | Underweight |
|----------------|--------|-------|------------|-------------|
| No. of subjects| 215    | 25    | 44         | 45          |
| Percentage (%) | 63     | 8     | 15         | 14          |

Figure 5. Walking Activity Analysis in Students according to their BMI

Table 3

| BMI Analysis   | Normal | Obese | Overweight | Underweight |
|----------------|--------|-------|------------|-------------|
| No. of subjects| 275    | 39    | 59         | 55          |
| Percentage (%) | 63     | 10    | 15         | 12          |

Discussion

As per MET Values

11% Subjects have MET values above 3000 METs-min/week. 50% subjects have MET values between 600 METs-min/week and 3000 METs-min/week. 39% subjects have MET values below 600 METs-min/week.

Hence 39% subjects were termed as inactive, 50% as moderately active while 11% were termed as HEPA active according to their respective recorded physical activity.

According to BMI Levels

Out of 450 subjects, 13% were underweight, 64% normal, 14% overweight, and 9% were obese.

Out of 402 female subjects, 14% were underweight, 65% normal, 13% overweight, and 8% were obese.
Out of 48 male subjects, 2% were underweight, 56% normal, 23% overweight, and 19% were obese.

**According to Activity Analysis and BMI**

Out of 450 subjects, 31% were involved in vigorous physical activity, 73% in moderate physical activity, and 95% in walking activity.

Out of the subjects involved in vigorous physical activity (31%), 58% were normal, 18% obese, 15% overweight, and 9% were underweight.

Out of the subjects involved in moderate physical activity (73%), 63% were normal, 8% obese, 15% overweight, and 14% were underweight.

Out of the subjects involved in walking activity (95%), 63% were normal, 10% obese, 15% underweight, and 12% were overweight.

**Activity Analysis according to BMI**

Out of normal subjects (289), 39% were inactive, 51% moderately active, and 10% were HEPA active.

Out of obese subjects (40), 32% were inactive, 42% moderately active, and 26% were HEPA active.

Out of underweight subjects (59), 53% were inactive, 39% moderately active, and 8% were HEPA active.

Out of overweight subjects (62), 27% were inactive, 56% moderately active, and 17% were HEPA active.

**Conclusions**

- 39% physiotherapy students were inactive.
- 50% physiotherapy students were moderately active.
- 11% physiotherapy students were termed as HEPA active.

**Recommendations**

According to the present study, we can recommend that

- Being active for 1.5 to 2 hours throughout the day as per leisure time physical activity (LTPA) recommendations.
- 3 or more days of vigorous physical activity for at least 30 minutes per day.
- 5 or more days of moderate physical activity for at least 30 minutes per day.
- 5 or more days of combination of walking activity and moderate activity for 30 minutes achieving a minimum of 600 MET-min/week.²

**Conflict of Interest:** None

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