

“Effors To Improve Body Through Measurement Index Industry Search”Merchant Marine Higher Education

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Abstract: This study aims to analyze the state of physical fitness cadet STIP and analyze study Body Mass Index (BMI) cadets STIP. This research is expected to be usefubs input and consideration material for releaced institution in order to make campus activity program. The method used in this research is quantitative descriptive analysis method with data processing. The subjects of this study were the cadets of STIP in 2015. The example used was cadets of the third semester of batch 57 and the fifth semester of batch 56 and the seventh semester of batch 55 to know the B M I cadets were weasured by the height test in meters and weight in kilograms. Technical analysis of data with descriptive analysis with percentage.

The study concluded that by performing calcubtion using BMI (Body Mass Index) calcubtions against cadets of 1295 cadets, there are still some who have less ideal and fifth semester (batch 56) for the category there are 49,09% (407 people), fatness category there are 44,51% (369 people),the category of obesity 156,39% (53 people). The third semester of female cadets (batch 57) and fifth semester (batch 56) for the skinny category were 10,13% (8 people)and the obese category 15,19% (12 people), seventh cadets (batch 55) for the category of thin 3,95% (13 people), normal. Category 59,88% (197 people),fatness category 14,59% (48 people), obesity category 15,50% (51 people). The last is the seventh cadet data of women.(batch 55)for the category of thin 0% (none),normal category 86,05% (37 people,fatness,category 4,65% { 2 person) and obesity 9,03% (4 people).

Keywords : sports activities, physical fitness, ideal mass index, cadets

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I. INTRODUCTION

Merchant marine higher education (STIP) Jakarta as atechncial implementing unit under the function of providing education for the community seafrling, as a public instution, the STIP is expected to participate in supporting the fulfillment of the needs of seafarers resources.

Merchant marine higher education. In conduting open education (three) majors or courses of study that is nautical, technics and port and shipping management and has aboarding scholl education system or boarding school where students/cadets conduct all educational activities and activities outside. The campus enviroment. In addition to the demands of quality in the field of education, students/cadets are also required to have physical fitness and good physical appearance.

From the background he or she is interested to get alot of things.cadets that still contain obesity, so in order to research desires to conduct research with the title:

Formulation of the problem Based on the identification of physical fitness problem through measurement of Body Mass Index of cadets done, it can be formulated the issues raised are :

1. What is the cause of unfeasible sports activities that require physical fitness.
2. Why there is still a less than ideal mass index of cadets.

II. HEADINGS

Physical fitness is needed by the students/cadets, because the seafactors are very supportive of the results of activites undertaken. Therefore the physical fitness associated with a students/cadets is an important aspect that must be maintained. To maintain his fitness, cadets are required to manage their lifestyle by regularly exercising or awoiding foods that don't fit with his body so cadets will have a level of physical fitness they have so as to maximize. The mind and energy to move. Theoretical Basis

1. Physical Fitness

Physical fitness is power and ability to do works or activities, enhance work potency without experiencing exhaustism which matter or excessive.

Physical fitness concerne in body adjustment ability of a person against body changing which adjusted by certain activity and describes someone’s ability in doing various level of physical ability.

Therefore, in physical fitness are three main factors that is suitable factors for the body, work factor and health factor. Effort to develop and maintain physical fitness one way is to do various exercise physical fitness regularly.

Here are the advantages of physical fitness

- a. increase blood circulation and heart system
- b. increase physics and endurance of the body
- c. improve the organs recovery after exercise
- d. have fast respons body works

2. Physical fitness exercise

Physical fitness exercise is physical fitness according to ways and rules for enhancement physical fitness. The resulting improvement can be seen from motion improvement, not easily tired, and skills improvement. Physical fitness exercise include strength system, speed, endurance and body flexibility

- a. strength training
- b. speed training purposely tp train the speed of one’s movement quick exercise distance of 40 meters and 60 meters
- c. muscle endurance exercise
- d. heart and lung endurance exercise
- e. flexibility exercise

3. Physycal fitness test

Physical fitness test is an activity procedure in the form of physical exercise bin the show to measure fitness level in accordance with the purpose. Physical fitness level can be known by test and measurement there are principle and exercise have to do.

Here are some text to measure strength, speed, endurance, and flexibility

- a. pull-up test
- b. fexed and hang test
- c. sprint 60 meters
- d. sit and reach test

4. Body Care

Health and fit body is dreams for everyone. The fresh body of course not obtained instaneously. Body care is required to keep the body healthy. Here are some body care to keep fresh body

- a. healthy food
- b. healthy life
- c. take a good rest enough
- d. regular exercise

5. Definition, to measure and to calculate Body Mass Index (BMI)

Body Mass Index is an calculate number from one’s weight and height, body mass index give reliable indcator about obesity to many people and this measure is used for screening body weight category that might be possible tlead and push an influential with disordser or health problem

With first screening and know BMI, you can control your body weight with healthy life style so you can be spared from problems and health disorder or illness as well as mental psychology disorders

Below this are tool or online devices to measure Mass Body Index with fast and easily. This device is called with Body Mass Index (BMI) calculator

1. Means Of Body Mass Index (BMI)

Below this are classification table or BMI classification from WHO (world helath organization)

MEANS	BMI
Normal Weight	19-24,9
Over Weight	25-24,9
Obesity level I	30-34,9
Obesity level II	35-39,9
Obesity level III	_>40

Here is the table of classification of BMI classification based on age according to national research council (NRC) in 1989

AGE	BMI
19-24 years old	19-24
25-34 years old	20-25
35-44 years old	21-26
45-54 years old	22-27
55-64 years old	23-28
More than 65 years old	24-29

The real problem is for athlete. For athlete the Body muscles tend to be larger and body muscles have more weight than body fat, so they have body mass index value at the time of measurement, but doesn't mean that this is about health issue.

2. How To Counting BMI (body mass Index)

BMI (body Mass Index) is one of the ways used to masure the normal weight of a person based on the height of his body. In Indonesia, Body Mass Index (BMI) is called with Index Massa Tubuh (IMT) the weight with over scales is called by obesity. Obesity can increase risk of illness like diabetes, heart attack, hypertens, uric acid, high colestrol and also sleep apnea which means is difficult to sleep tightly because of respiratory disorders.

Therefore, to know the Body Mass Index (BMI) our body is important things in order to keep our body weight and we always in good conditio so we can decrease risk of illness because of obesity.

3. How To Calculate BMI (Body Mass Index)

In internet, many available automatic calculator to calculate Body Mass Index, but otherwise we also have to know the formula so we can calculate manually.

The formula to calculate Body mass Index (BMI) is very easy and simple

Here is the formula to calculate Body Mass Index (BMI)

$$\text{BMI} = \text{weight} / (\text{height} * \text{height})$$

Information :

- Unit for weight is Kilogram (kg)
- Unit for height is meters (m)

4. Example to calculate Body Mass Index (BMI)

Ex 1 :

Your body is 65 kg and your height is 1,70 (170 cm). How many your body mass index ?

$$\text{BMI} = 65 \text{ kg} / (1,70 * 1,70)$$

$$\text{BMI} = 22,49 \Rightarrow \text{Normal}$$

Ex 2 :

Your weight is 75 kg and your height is 1,65 (160 cm). How many your Body Mass Index ?

$$\text{BMI} = 75 \text{ kg} / (1,65 * 1,65)$$

$$\text{BMI} = 27,55 \Rightarrow \text{obesity}$$

5. BMI (Body Mass Index) Category

Below is the Body Mass Index or BMI Table based on the Ministry of Health of the Republic of Indonesia which is divided into several categories which are BMI category for men and category for Women.

BMI Category for Men

BMI Score	Category
<17	Thin
17-23	Normal
23-27	Over Weight
>27	Obese

BMI Category for Women

BMI Score	Category
<18	Thin
18-25	Normal
25-27	Over Weight
>27	Obese

6. Definition of obesity

Obesity is a medical condition marked by excess body fat that accumulates in a way that has detrimental impacts on health, which then lowers life expectancy and / or improve health problem. a person is considered obese (obese) when the body mass index (IMT), which is a measure obtained from the distribution of the weight in kilograms by height in meters, more than 30 kg / m2.

In 2013, people with obesity in the world amounted to 2.1 billion and Indonesia into the top 10 with a rang of obesity amounted to 40 million people, equivalent to the entire population of western Java. Unlike the case in developed countries are obese mostly men, then in Indonesia who are obese are women.

III. FIGURES AND TABLES

A. The methodology were used

In conducting this research, the methodology used is descriptive quantitative analysis method with processing data through the methode of measuring of body index

B. Time and Place of research

1. Time of research

The research process doing by research team within 6 month, start from prepare research until the prepare was done.

2. Place of research

The place writter doing the research in merchant marine higher education university.

C. Technical data collection .

There are some data source used are :

1. Primary data

The data of height and weight was taken from cadet nd female cadet research from (batch 57 and 56) and 7 term from (batch 55)

2. Secondary data

The data was taken from unit of youth guidance, the unit of sports and art , the unit of dormitory , and the unit clinic of merchant marine higher education .

dex measurement and internet media that contains the informations related with the object of the matter studied

D. Population

The object of population was being from research are cadet and female cadet III semester batch 57 and V semester batch 56 and VII semester batch 55

E. Analysis technique data

Before doing the technique analysis , the data obtained and collected from various source and will be collected and after that was complied from grouping data based on semester and force

IV. CONCLUSION

The activity of cadets in the campus is already maximal but not in regular sports activities that can support physical fitness which is can be seen from the physical appearance. We can see it from PHST (fixed daily command), where all of the activities are academical and sport activities are only done in the morning and an hour on the evening, there are: football, voleyball, badminton, basketball, and swin Analysis

The data analysis performed below is an analysis based on qualitative and quantitative data.

1. Analysis of Schedule of Taruna Activity according to Perintah Harian Sifat Tetap (PHST)

Table-1: Schedule of cadet activities according to Perintah Harian Sifat Tetap (PHST).

TIME	ACTIVITIES
04.00-04.30	Wake Up Alarm and Morning Exercise
04.30-05.50	Subuh pray, Cleaning Room and Dormitory and Take a Bath
05.50-06.00	Breakfast Preparation
06.00-06.20	Breakfast
06.20-06.30	Morning Ceremony Preparation
06.30-07.00	Morning Ceremony

07.00-07.20	Guidance and Activity Evaluation
07.20-07.30	Class Preparation
07.30-10.00	Lecturing Activities
10.00-10.15	Break
10.15-11.50	Lecturing Activities
11.50-12.20	Dzuhur Pray
12.20-12.45	Lunch
12.45-13.00	Class Preparation
13.00-15.00	Lecturing Activities
15.00-15.30	Ashar pray and Break
15.30-17.15	Watch Keeping Ceremony,afternoon Exercise, Soft Skill and Another Extracurricular Activities
17.15-18.00	Take a Bath and Maghrib Pray
18.00-18.20	Maghrib Pray
18.20-18.35	Dinner Preparation
18.35-18.55	Dinner
18.55-19.25	Isya Pray
19.25-20.00	Cleaning Room & Preparation for night inspection
20.00-20.45	Night Inspection
20.45-22.00	Night Study
22.00-04.00	Take a Rest

Based on the 1 table above, following the Perintah Harian Sifat Tetap (PHST) to keep the physical fitness of cadets and female cadets with morning and afternoon exercise only 1 hour based on hobby determined sport. And based on observation in morning and afternoon exercise in order to support physical fitness that hasn't been done optimally

2. Extracullicular activity data the sports cadet III semester that suitable with schedule in sports and art units.

Tables – 2: Sports Extracullicular cadets III semester (batch 57) based on Hobbies

NO	SPORTS	CADETS	SCHEDULE	INSTRUCTOR
1	Futsal	19	Tuesday & Wednesday	Coach
2	Foot ball	23	Tuesday & Wednesday	Coach
3	Volley ball	28	Tuesday & Wednesday	Coach
4	Basket ball	23	Tuesday & Wednesday	Coach
5	Diving	29	Tuesday & Wednesday	Coach
6	Canoe	32	Tuesday & Wednesday	Coach
7	Diving	38	Tuesday & Wednesday	Coach
8	Badminton	19	Tuesday & Wednesday	Coach
9	Martial Arts	9	Tuesday & Wednesday	Non Coach
10	Tabble tennis	6	Tuesday & Wednesday	Non Coach
11	Athletic	1	Tuesday & Wednesday	Non Coach
12	Swim	16	Tuesday & Wednesday	Non Coach
13	Billiard	9	Tuesday & Wednesday	Non Coach
TOTAL		252		

Based on table-2 above the sport branch based on hobby owned by cadets semester III (batch 57) not all have a trainer or instructor in each branch. Sports that have trainers / instructors only 8 sport branches only. The implementation of sports activities based on hobby are hold only every Monday and Thursday in a week with the activity time is only 1 hour starting from 16.00 WIB until 17.00 WIB. And seen from the total of all cadets semester III (batch 57), amounting to 466 while those who follow sports activities based on hobby cadets only 252 cadets. This condition that makes not maximal daily sports activities cadets in maintaining physical fitness and ideal physical appearance.

3. The data of extracurricular activities of sports cadets semester vii according to the schedule implemented by the Unit of Sport and art.

Table 3: Activities of Extracurricular Sports Semester VII (batch 55) according to Schedule Based on Hobby.

NO	SPORT BRANCH	CADETS	SCHEDULE	INSTRUCTOR
1	Futsal	37	Monday & Wednesday	Non Coach
2	Foot Ball	23	Monday & Wednesday	Non Coach
3	Volley Ball	27	Monday & Wednesday	Non Coach
4	Basket Ball	17	Monday & Wednesday	Non Coach
5	Diving	29	Monday & Wednesday	Non Coach
6	Canoe	9	Monday & Wednesday	Non Coach
7	Diving	9	Monday & Wednesday	Non Coach
8	Badminton	46	Monday & Wednesday	Non Coach
9	Table Tennis	6	Monday & Wednesday	Non Coach
10	Athletic	2	Monday & Wednesday	Non Coach
11	Swim	42	Monday & Wednesday	Non Coach
		239		

Based on Table 3 above from 13 sports based on hobby which is owned by the cadets semester vii (batch 55) followed by 239 cadets of 372 cadets don't not have a coach or instructor. Implementation of sports activities in accordance with the cadets VII semester hobby on the current condition handed over directly to the cadets and no direct guidance of the coach so that what is expected is not maximal. The activity is only hold on every Monday and Wednesday in a week starting from 16.00 WIB until 17.00 WIB. This condition makes daily sport cadets activity is not maximal in maintaining physical fitness and ideal physical appearance.

4. Data of Cadet's Body Mass Index (BMI) Measurement semester III and V (batch 57 and 59)

Table 4 Bmi Category For All Cadets

BMI CATEGORY FOR ALL CADETS			
BMI SCORE	CATEGOR-Y	FREQUENCY	PERCENTAGE
<17	THIN	-	-
17-23	NORMAL	407	49.09
23-27	OVER WEIGHT	369	44.51
>27	OBESE	53	6.39
TOTAL		829	

Based on table 4 above after measurements using the Body Mass Index (BMI) method for each cadet semester III and V (batch 57 and 56) which amounted to 829 cadets are still 44.51% (369) cadets categorized as obese and 6.39 % (53) cadets are categorized as obese.

5. Body Mass Index Measurement Data (BMI) of Female Cadet semester III batch 57 and semester V batch 56.

Table 5: BMI Female Cadet Semester III and V (batch 57 and 56) Measurements

BMI CATEGORY FOR ALL CADETS			
BMI SCORE	CATEGORY	FREQUENCY	PERCENTAGE
<17	THIN	5	6.33
17-23	NORMAL	54	68.35
23-27	OVER WEIGHT	8	10.13
>27	OBESE	12	15.19
TOTAL		79	

Based on table 5 above after measurements using the Body Mass Index (BMI) method for each female cadet semester III and V (batch 57 and 56) which amounted to 79 female cadet are still 10,13% (8) cadets categorized as obesity and 15 , 19% (12) cadets are categorized as obese.

6. Body Mass Index Measurement Data (BMI) cadets semester VII batch 55.

Table 6: Measurements of BMI Taruna Semester VII Batch 55

BMI CATEGORY FOR ALL CADETS			
BMI SCORE	CATEGORY	FREQUENCY	PERCENTAGE
	THIN	13	3.95

	NORMAL	197	59.88
	OVER WEIGHT	48	14.59
	OBESE	51	15.50
TOTAL		329	

Based on Table 6 above after the measurements using the Body Mass Index method for each cadet semester VII (Batch 55), which amounted to 329 cadets are 14.59% (48) cadets categorized as overweight and 15.50% (51) cadets categorized as obese.

7. Body Mass Index Measurement Data (BMI)of Female Cadet Semester VII batch 55.

Table 7: BMI Measurement of Female cadet Semester VII Batch 55

BMI CATEGORY FOR ALL CADETS			
BMI SCORE	CATEGORY	FREQUENCY	PERCENTAGE
<17	THIN	0	-
17-23	NORMAL	30	69.77
23-27	OVER WEIGHT	9	20.93
>27	OBESE	4	9.30
TOTAL		43	

Based on Table 7 above after measurement using Body Mass Index (BMI) method for each semester VII (batch 55) consisting of 43 cadets still has 20.93% (9) cadets categorized as obese and 9,30% (4) cadets are categorized as obese.

B. Discussion

1. The Cadet’s Sport Activities are Not Implemented Yet Which is Insist Physical Fitness.

In accordance with the data analysis has been described above based on Perintah Harian Sifat Tetap (PHST) activities and extracurricular activities based hobby performed by cadets every day needs to be done consistent implementation of sports activities planned and structured to support youth physical fitness. This can be done by carrying out sports activities that continue in the form of physical fitness exercise by carrying out daily sports activities as follows :

a. Strength Exercise

Strength is the ability of the muscle to perform work that serves to generate tension against a pressure. Strong muscles can protect the surrounding joints and reduce the possibility of injury due to physical activity.

b. Speed Exercise

Speed exercise by doing a sprint exercise aims at training the speed of one's movements. Sprint exercise distance of 40 meters and 60 meters.

c. Endurance Exercises

Endurance exercise is divided into two, namely muscular endurance and durability of the heart and lungs

d. Heart and lung endurance exercises

Heart and lung resistance exercises are exercises that can improve and develop heart and lung resistance. Such as running and long range swimming, interval training, and any exercise that makes the body work morethan 6 minutes.

e. flexibility exercise

flexibility is a body move with range which is can be done by hands, feet, skin and relation between body system. The hinge conditions that limit the body move with range, and also with grease body excessive. Injury can be happen if hand s and foot is forced to move more than its ability.

2. still the cadets not ideal with Body Mass Index

Body Mass Index of cadets which nit ideal very take effect with performance of cadets in everyday activity . this can be seen directly when yhe cadet using their uniform. According the mesasure of Body Mass Index (BMI) or Index Massa Tubuh to do for every cadets III and V semester (batch 56 and 57) that have 829 cadets still has 44,51 % (369) cadets in overweight category and 6,39 % (53) cadets in obesity category and for female cadets III and V semester (batch 56 and 57) that have 79 female cadets still has 10,13 % (8) female cadets in overweight category and 15,19% (12) female cadets in obesity category and for cadets VII semester (batch 55) that have 329 cadets still has 14,59% (48) cadets in overweight category and 15,50% (51) cadets in obesity category and for female cadets VII semester (batch 55) that have 43 female cadets still has 20,93% (9) female cadets in overweight category and 9,30% (4) femle cadets in obesity category.

That have seen with data result of measure Body Mass Index we can take the cumulatif presentage from 1280 cadets still has 33,90% (434) cadets in overweight category and 9,37% (120) cadets in obesity category.

This condition have to be anticipate with doing the exercise to support the physical fitness to keep the ideals body of cadets and female cadets with to watch the cadets sports time and what sports that doing every day in order to keep the physical fitness continously. Related of cadets physical fitness with ideals cadet's body to performance of cadets and female cadets significantly. So that have to do sports structurarly with doing exercise everyday, as folows :

1. strength exercise, with push up, sit up, and back lift
2. speed exercise, with running 40 meters and 60 meters
3. endurance exercise, with lifted the barbell
4. heart and lungs endurance, with run and long-range swimming
5. flexibility exercise, with stressing regularly.

V. CONCLUSION

Based on analysis and discussion and supporting data about physical fitness cadets and female caets as measured with body mass index metode then it can be taken the conclusion from this research,as follows :

1. Not yet implemented exercise activity caets and female cadets because of morning and afternoon exercise according with hobbies/skills implemented suitable with *Perintah Harian Sifat Tetap* (PHST) not yet goes well and not all cadets and female cadets do the exercise.
2. Based on result Body Mass Index (BMI) or *Indeks massa Tubuh* which has been done by all cadets III and V semester (batch 56 and 57) that have 829 cadets still has 44,51 % (369) cadets in overweight category and 6,39 % (53) cadets in obesity category and for female cadets III and V semester (batch 56 and 57) that have 79 female cadets still has 10,13 % (8) female cadets in overweight category and 15,19% (12) female cadets in obesity category and for cadets VII semester (batch 55) that have 329 cadets still has 14,59% (48) cadets in overweight category and 15,50% (51) cadets in obesity category and for female cadets VII semester (batch 55) that have 43 female cadets still has 20,93% (9) female cadets in overweight category and 9,30% (4) femle cadets in obesity category.

That have seen with data result of measure Body Mass Index we can take the cumulatif presentage from 1280 cadets still has 33,90% (434) cadets in overweight category and 9,37% (120) cadets in obesity category, so to anticipate this problem we have to do strength exercise, speed exercise, and endurance exercise, heart and lung flexibility axercise regularly everyday with 30 minutes every day.

B. Suggest

1. to every institution part in tihis case for moral and mentality coaching units to do the exercise activity that demanding physical fitness to do the exercise suitable to create cadets and female cadets that have physical fitness like to do strength exercise, speed exercise, endurance exercise, heart and lungs exercise and flexibility exercise regularly every day with 30 minutes every day.
2. to every institution part in this case for moral and mentality coaching units to do revision *Perintah Harian Sifat Tetap* (PHST) with adding time for rest with minimal 30 minutes after teaching and learning process.

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