



Science, Movement and Health, Vol. XVI, ISSUE 2 Supplement, 2016
September 2016, 16 (2, Supplement): 680-683
Original article

PLANNING AND PREPARING PHYSICAL EDUCATION TEACHERS ON CARDIOVASCULAR ENDURANCE, MUSCULAR ENDURANCE, AND MUSCLE STRENGTH IN THE IMPLEMENTATION OF PHYSICAL EDUCATION CURRICULUM OF FORM 4 (FITNESS STEM)

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Abstract*

Aim. This research related to the implementation of physical education curriculum for Form 4 (Fitness Stem). The purpose of this study was to survey how the physical education teachers undertake planning and preparation on components cardiovascular endurance, muscular endurance, and muscular strength.

Methods. A survey method was used to conduct this research. The sample of 50 participants were physical education teachers. A questionnaire was used to collect the data from sample. For data analysis, descriptive statistics such as frequency, percentage, mean, and standard deviation were used.

Results. The findings show that physical education teachers in the district of Hulu Selangor have made planning and good preparation on cardiovascular endurance, muscular endurance, and muscle strength.

Conclusions. The physical education teachers (Form 4) must be the plan and well prepared about the components of muscle strength, cardiovascular endurance and muscular endurance in the implementation of Form 4 physical education curriculum (Fitness Stem). If they plan and well prepared, they will easy to conduct the physical education class and the implementation of teaching and learning can be improved and effective.

Keywords: Planning and preparation; physical education, implementation, curriculum.

Introduction

According to the Malaysian Physical Education Syllabus for Primary and Secondary Education (CDC, MOE, 1999), the Physical Education curriculum has been formulated to meet the needs of growth and development of the individual towards developing a vibrant, prosperous and productive person.

The curriculum is divided into three Stems, namely fitness, skills, and Sportsmanship. In Fitness Stem, there are three titles that students should be exposed to the health-based Fitness, Fitness-based performance, and training methods. "Health-Based Fitness" consists of five components: cardiovascular endurance, muscular endurance, muscular strength, flexibility and body composition.

Cardiovascular endurance is the most important aspect of fitness. It is basically how strong our heart is, which can potentially add years to our life. Muscular endurance is very important

for people playing sports and who have to sustain an activity for long periods of time. Muscular endurance is determined by how well your slow twitch muscle fibers are developed.

Muscular strength is much different from muscular endurance. Strength is a measure of how much force your muscles can exert, while endurance is the measure of how many times your muscles can repeat a specific exertion of force.

Flexibility refers to the absolute range of movement in a joint or series of joints, and length in muscles that cross the joints to induce a bending movement or motion.

Body composition is used to describe the percentages of fat, bone, water and muscle in human bodies.

Referring to the Education Act 1996 (Professional Circular no. 25/1998), it states that physical education is a core subject in government schools in Malaysia.

The subjects of the core group 'must' be

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Received 09.03.2016 / Accepted 12.04.2016

*the abstract was published in the 16th I.S.C. "Perspectives in Physical Education and Sport" - Ovidius University of Constanta, May 20-21, 2016, Romania



studied by all students to meet the needs of comprehensive and coherent individual development in line with the objectives of the New Curriculum for Secondary Schools (Abdullah Sani, 2003).

The Ministry of Education also recommended that physical education be taught at all levels including the Form 4 students (Ministry of Education, 2005).

Although Physical Education is a core subject, it still faces problems in implementation. For example, the monitoring report of the Curriculum Development Centre (CDC, 2007) on implementation of Physical Education and Sport in Kelantan and Sabah showed problems in the teaching and learning of Physical Education.

Among those problems are: not teaching physical education according to daily planning, not teaching according to the existing curriculum, not writing proper daily lesson plans, training troops during school physical education, just observing and not teaching during physical education classes, and letting teachers teach other subjects during Physical Education time.

Problems inherent in the implementation of physical education and sport have indirectly led to the desire of researchers to carry out a study to see how it is with the implementation of the Form 4 Physical Education curriculum (Fitness Stem) in secondary schools.

Especially on the level of planning and preparation of teachers on topics in cardiovascular fitness, muscle endurance, and muscle strength. All three titles are the contents of Form 4 Physical Education.

The researchers found that the study related to this issue has yet to be conducted. Most of the existing research in Malaysia focused on studying implementation of physical education as a whole.

Methods

In this study, the researchers conducted research on the implementation the Physical Education curriculum (Fitness Stem) for Form 4 in secondary schools in one district in Selangor involving 50 teachers of Physical Education options. All physical education teachers under option were taken for the success of this research.

Researchers simply select all options Physical Education teacher who teach Form 4 only because the information contained in the questionnaire is information related to the content of Form 4 Physical Education curriculum.

If the teacher's option does not involve physical education, they are less likely to give a proper response to the questionnaire.

Presentation and report data in this study were made by using its instrument of accession questionnaire. All data were collected based on the research that has been planned including background information about the respondents.

Data were analyzed using descriptive mean. For reviewing teachers' planning and preparation, researchers used the rating mean of High, Medium and Low. Staging Mean in form through the following calculation:

$$\text{Maximum score (5) - Minimum score (1)} \\ [5 - 1] \div 3 = 1.33$$

Table 1: Planning and Preparation Phase Category Physical Education Teachers

Level of Implementation	Total Score
Low	1.00 – 2.33
Moderate	2.34 – 3.66
High	3.67 – 5.00

Results

Table 2 shows the frequency mean and the level of planning and preparation of physical education teachers on the components of cardiovascular endurance, muscular endurance, and muscle strength in the Form 4 of physical education curriculum (Fitness Stem).

Cardiovascular Endurance

In the title cardiovascular endurance, items which have a mean score higher level: understanding cardiovascular endurance (Mean=4.06), exercise can improve cardiovascular endurance (Mean=4.14), cardiovascular endurance training effect (Mean=4.00), safety when performing cardiovascular endurance exercise (Mean=4.38), and The role of the heart in the circulatory system (Mean=3.82).

Other items registered only moderately high level mean scores.

Table 2 : Frequency, percentage, mean, standard deviation, and the level of planning and preparation of teachers of physical education on cardiovascular endurance, muscular endurance, and muscle strength in implementation of physical education curriculum form 4 (Fitness Stem)



Items	M	Level
<i>I. Cardiovascular</i>		
<i>Endurance.</i>		
1. The meaning of cardiovascular endurance.	4.06	High
2. The role of the heart in the circulatory system.	3.82	High
3. Exercise can improve cardiovascular endurance.	4.14	High
4. The relationship between the respiratory and cardiovascular systems.	3.62	Moderate
5. Cardiovascular endurance training effect.	4.00	High
6. Safety aspects when implementing cardiovascular endurance training.	4.38	High
<i>II. Muscular Endurance</i>		
7. Definition of muscular endurance.	4.20	High
8. Activities that can increase endurance.	4.10	High
9. Isometric contraction	3.17	Moderate
10. Isotonic contraction.	3.17	Moderate
11. Isokinetic contraction.	3.10	Moderate
12. The pattern of activity in isometric exercise.	3.11	Moderate
13. The pattern of activity in isotonic exercises.	3.09	Moderate
14. The pattern of activity in isokinetic training.	3.15	Moderate
15. the threshold level training in physical fitness	3.26	Moderate
16. the importance of isotonic exercise in the game.	3.35	Moderate
17. Aspects of safety to avoid injury during the muscle endurance exercises.	4.38	High
<i>III. Muscular strength</i>		
18. The meaning of muscle strength	4.34	High
19. Exercise increases muscle strength.	3.92	High
20. Muscle strength training methods.	3.78	High
21. Strength training the upper body muscles.	3.71	High
22. Exercise the lower body muscle strength.	3.76	High

23. Safety aspects in the training muscle strength.	4.28	High
24. Strength training	4.10	High

M= Mean

Muscular Endurance

Under muscular endurance, items that have a mean score of high level is an activity that can increase muscle endurance (Mean=4.10) and the safety to prevent injuries while undergoing training in muscular endurance (Mean=4.38) and definition of muscular endurance (Mean=4.20). Other items such as the definition of muscular endurance, isometric contraction, isotonic contraction, isokinetic contraction, the pattern of activity in isometric exercise, the pattern of activity in isokinetic exercise, the threshold level training in physical fitness, and the importance of isotonic exercises only gained moderately high mean score of between 3.01 to 4.00.

Muscle strength

Under the title muscle strength, items that have higher level mean scores were understanding of muscle strength (Mean=4.34), safety in doing strength training (Mean=4.28), and muscle strength training (Mean=4.10), Exercise increases muscle strength (Mean=3.92), Muscle strength training methods (mean= 3.78), Strength training the upper body muscles (mean=3.71), and Exercise the lower body muscle strength (Mean=3.76).

Discussion

Cardiovascular endurance, muscle endurance, and muscle strength are the three components contained in the content of Form 4 Physical Education Curriculum (Fitness Stem).

The content of the lessons need to be designed and provided by the Physical Education teacher in implementation of Form 4 physical education curriculum (Fitness Stem).

Therefore, this part of the discussion will cover the level of planning and preparation of Form 4 physical education teachers on the components of cardiovascular endurance, muscle endurance, and muscle strength.

Based on the findings, all the items in the components of muscle strength have a high Mean score, followed by components of cardiovascular endurance and muscular endurance.

According to that, the physical education teachers in the district of Hulu Selangor have made planning and good preparation on muscle



strength, cardiovascular endurance and muscular endurance components before they implement the process of teaching and learning of Form 4 Physical Education Curriculum (Fitness Stem). These findings indicate that physical education teachers have to plan and prepare well for the components of muscle strength, cardiovascular fitness and muscle endurance.

All the components contained in the physical education lesson content (Form 4) have been designed and well prepared before they carry out the process of teaching and learning. According to Jacobsen, Eggen, and Kauchak (2002), the content of the lesson is the main idea in the teaching and learning process.

Tjeerdsma and Metzler (2000) explain that the structure and content of education is an important part of the components of a program or course. Teachers must know about the content of the lessons they will teach and must know how to transfer content to students so that students can understand it (Kauchak & Egge, 2003).

Conclusions

Based on the finding, founded it physical educations teachers (Form 4) have been well plan and prepare the components of muscle strength, cardiovascular endurance and muscular endurance before they conduct the process of teaching and learning of Form 4 physical education curriculum at secondary school.

The physical education teachers (Form 4) must be the plan and well prepared about the components of muscle strength, cardiovascular endurance and muscular endurance in the implementation of Form 4 physical education curriculum (Fitness Stem).

If they plan and well prepared, they will easy to conduct the physical education class and the implementation of teaching and learning can be improved and effective.

Aknowledgements

For all of our participants from my study I want to say thank you.

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