Health-Related Fitness Instructional Practices among Maltese Physical Educators

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ABSTRACT

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A European study by Nikitara et al. (2021) unveiled Malta's alarming rates of physical inactivity, positioning it among the highest across Europe. Fang et al. (2017) emphasised the significant connection between physical activity (PA) and fitness, underscoring the importance of Health-Related Fitness (HRF) in physical education (PE) programmes to promote lifelong PA. Despite its recognised importance, there remains a gap in information regarding the status, structure, organisation, and implementation of HRF within Malta's PE curriculum, posing a need for further investigation. The objective of this study was to investigate current HRF practices in middle-school PE across state, church, and independent schools, while also uncovering the influences shaping perceptions and the delivery of fitness within local PE programmes. This research employed a mixed-methodology, integrating both quantitative and qualitative approaches. The quantitative phase involved a questionnaire which was completed by forty-eight middle-school PE teachers using convenience and snowball sampling techniques. representing state, church and independent institutional sectors. Semi-structured interviews were conducted with four PE teachers and two Heads of Department (HoDs) of PE for the qualitative phase. Descriptive analysis using data generated through Google Forms was employed for the questionnaire, while thematic analysis was utilized for the interviews. The main findings indicate that the topic of fitness and its assessment lack structure, displaying considerable disparities in practices, with some PE teachers giving it significant attention while others entirely dismiss it. The most influential factors affecting the instruction of HRF components were teacher perspectives and training, student attitudes and fitness levels, available resources and facilities, and time constraints. Consolidating the outcomes of this study with prior research suggests a pressing need for clearer guidance to PE teachers regarding the objectives, content, organisation, and delivery of HRF to ensure the provision of effective and engaging fitness lessons. Other challenges, such as a lack of resources and facilities, and limited PE lessons

should be addressed through a multi-faceted approach involving key stakeholders, such as senior leadership teams (SLT) and governing education authorities.

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Keywords: learning outcomes framework, influencing factors, health-related fitness, physical activity, teachers' perceptions

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List of Abbreviations

FREC	Faculty Research Ethics Committee
HoD	Head of Department
HRF	Health-Related Fitness
LOFs	Learning Outcomes Framework
MVPA	Moderate to Vigorous Physical Activities
NASPE	National Association for Sport and Physical Education
NCDs	Non-Communicable Diseases
NCF	National Curriculum Framework
PA	Physical Activity
PE	Physical Education
SB	Sedentary Behaviour
SRF	Skill-Related Fitness
SLT	Senior Leadership Team
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHO	World Health Organisation

CHAPTER 1 – INTRODCUTION

1.1. Background of the Study

The revised Learning Outcomes Framework (LOFs) for Physical Education (PE) underscores the importance of fitness, striving to guarantee its provision for all students throughout their educational journey. Furthermore, among the various assessment areas, fitness assessment has the highest priority within the LOFs (Ministry for Education, Sport, Youth, Research And Innovation (MEYR), 2023).

In addition to the implementation and impact of the LOFs, there has been a recent emphasis on the fitness, physical activity (PA) and health of adults and young individuals. Extensive research has raised concerns about the insufficient levels of regular PA across the whole population (Hills et al., 2015; Gea-García et al., 2020; World Health Organisation, 2022). In line with this, local findings indicate that Malta ranks second among European countries in terms of physical inactivity levels (Nikitara et al., 2021). Based on the evidence above, alongside the growing research highlighting the health advantages of exercise and fitness (Kamiya et al., 2015; Ortega et al., 2018), adult and children exercise recommendations have adopted lifelong engagement in PA as the foundation for setting PA guidelines (MEDE, 2015; World Health Organisation, 2022).

The local policy for *'Healthy Eating and Physical Activity'* recognises schools as crucial settings for health promotion efforts. It emphasises the role of school in instructing children and adolescents about the essential attitudes, skills and knowledge required to foster an active way of life (MEDE, 2015). Notably, Boone et al. (2007) made a specific recommendation to target school-age children due to a growing body of evidence indicating that inactive children are more likely to remain inactive into adulthood. Nonetheless, several authors claimed that PE programmes fail to fulfil their primary objective of promoting PA for lifelong engagement (Darst et al., 2012; Barney et al., 2015).

Despite its acknowledged importance within the LOFs, there needs to be more information about the state, content, organisation and implementation of health-related aspects within the PE curriculum in Malta. Hence, the connection between PE and health, as well as the status and implementation of Health-Related Fitness (HRF)

components within the LOFs, has undoubtedly emerged as a significant area deserving of investigation.

It is noteworthy to point out that the commencement of this research entailed a focus on the integration of HRF components. However, as the study progressed, the researcher recognised the appropriateness of using the term ‘fitness’ in the local context, as it aligns with the terminology specified in the revised LOFs, which encompasses skill-related components in addition to HRF elements (MEYR, 2023). Consequently, the terms ‘HRF’ and ‘fitness’ will be employed interchangeably based on contextual relevance.

1.2. Motivation

The researcher’s involvement in this research project stemmed from a deep-seated personal and professional curiosity to explore the connection between PE, fitness and health. As an individual involved in fitness training for a significant portion of their life and working in the fitness industry, the researcher has encountered numerous individuals who feel hesitant to join a gym, lack knowledge about where to begin, and struggle to understand the various options available for engaging in physical activities to sustain a healthy lifestyle. These experiences emphasised the significance of fitness in the PE curriculum to develop essential competencies.

Based on the abovementioned, the research aims to examine and depict the perspectives, approaches, and delivery methods employed in middle-schools across Malta regarding fitness. Consequently, the research seeks to answer the following research questions:

1. How is the Health-Related Fitness (HRF) component within the PE curriculum interpreted and delivered by middle school PE teachers?

2. What factors may influence the delivery and instruction of HRF in middle schools in Malta?

To achieve the set objectives, the research design was devised to encompass a combination of qualitative and quantitative methodologies. The quantitative component involved the distribution of a questionnaire aimed at middle-school PE teachers across Malta. Six semi-structured interviews were conducted for the qualitative component, involving four PE teachers and two Heads of Department (HoDs) from different institutional sectors.

The principal aim of the questionnaire was to collect data that would provide an overview of the scope and quality of fitness provision within schools. Additionally, it aimed to identify potential variations in approaches between schools and explore factors that may contribute to these disparities. Meanwhile, the interviews were designed to capture PE teachers' perspectives, attitudes and instructional practices regarding fitness.

1.3. Dissertation layout

The first chapter of this research study provides an overview of the context of the study, its aims and research questions. It also highlights the researcher's personal experience that sparked the curiosity to undertake the research. The literature review chapter summarises the existing international literature about HRF, covering factors affecting fitness, the purpose and benefits of HRF and associated models, and fitness assessment. The third chapter describes the research methods employed for data collection, including the selection process for participants. Additionally, it addresses the procedure for the data analysis as well as ethical considerations that were considered throughout the entire research process. The subsequent chapter presents the results obtained from the data collection phase. The fifth chapter presents a discussion, supported by relevant literature, and provides several arguments aligned with the research findings. Finally, the concluding chapter summarises the key findings of the research study and provides suggestions and recommendations for future research endeavours.

1.4. Conclusion

The present chapter has established the foundation for the research approach by introducing the primary objectives of the study and its corresponding research questions. It has also clarified the researchers' role in the study and provided a concise preview of the content that will be addressed in the forthcoming chapters. The subsequent chapter will delve into the existing literature relevant to the topic of HRF.

CHAPTER 2 – LITERATURE REVIEW

2.1. Introduction

It is believed that one of the major risk factors for the prevalence of non-communicable diseases (NCDs) such as obesity, diabetes, cardiovascular diseases, and

osteoporosis is the increase in physical inactivity and sedentary behaviour (SB) (Zhao et al., 2020). Ultimately, these behaviours lead to the deterioration of HRF levels in youth and adults alike (Weedon et al., 2022). Other research studies show that there is an evident link between low levels of PA, fitness and the increase in the incidence of cardiovascular risk factors (Myers et al., 2015; Gronek et al., 2020).

In this respect, the abovementioned literature indicates that there is great cause for concern with regard to the prevalence of NCDs. As a result, there has been an increased emphasis on the health and fitness levels of children and adolescents. It is argued that Quality Physical Education (QPE) programmes help students foster healthy habits even outside the classroom (Ries, 2020). Physical Education (PE) programmes aim to promote lifelong PA and a healthy lifestyle in order to improve the quality of life (Van Acker et al., 2010). Of particular importance within the PE curriculum is the topic of HRF since it has the ability to instil knowledge and equip students with the right tools to help students engage in lifelong PA (Houston & Kulinna, 2014).

Despite its potential, Aquilina (1998) argues that the term HRF can be ambiguous and misinterpreted by many. Therefore, this literature review seeks to provide a clearer picture of the components of fitness that are associated with health and its place within the PE curriculum.

2.2. Current situation

In recent decades, the lifestyle of youth and adults has seen a significant shift towards physical inactivity and corresponding increases in SB. Low participation levels in PA may be attributed to several factors including increasing availability of technology; labour-saving devices; lack of sports and recreational facilities; and environmental factors such as traffic (Fennel et al., 2019; WHO, 2020). Consequently, poor lifestyle habits and fewer opportunities for PA have led to a plethora of repercussions which will be unpacked further in this section.

2.2.1. Physical Inactivity trends

In line with the abovementioned, current information regarding PA levels across all ages indicate alarming trends (Hills et al., 2015; Gea-García et al., 2020). According to the World Health Organisation (WHO) (2022), 25% of the world's adult population does not engage in adequate PA to maintain a healthy lifestyle. The PA levels have remained stagnant since 2001 and have even worsened by 5% in high-income countries (WHO, 2022). To make matters worse, a body of research has reported that 80% of adolescents globally are not meeting the recommended PA guidelines established by WHO which advise that children and adolescents should engage in at least an average of 60 minutes per day of moderate-to vigorous-intensity PA (MVPA) and three days of muscle strengthening activity (Hallal et al., 2012; Serbes et al., 2017; WHO, 2022).

Low levels of PA are also persistent locally. A research study by Nikitara et al. (2021) investigated the prevalence of physical inactivity across twenty-eight European countries. The results showed that Malta had one of the highest rates of physical inactivity across Europe. Additionally, in their study assessing physical activity (PA) levels and sedentary behaviour (SB) patterns of Maltese boys and girls using objective measures, Decelis and colleagues (2014) have concluded that just 39% of boys and 10% of girls meet the recommended levels of daily moderate-to-vigorous physical activity (MVPA). These poor levels of PA are tracked even through adulthood, with just 58.8% of the Maltese adult population reaching the recommended levels of MVPA (WHO, 2018). This aligns with evidence that suggests that inadequate PA levels from a young age, will persist into adulthood (Twisk et al., 2000; Nader et al., 2008).

The aforementioned tendencies are worrying due to the implications they have on the health and well-being of individuals (Fang et al., 2017). Indeed, physical inactivity has been described as a global pandemic since it is one of the leading causes of NCDs globally (Kohl et al., 2012). This is reinforced by Hallal et al. (2012), who stated that declines in PA and increases in SB have led to higher obesity rates and its associated health issues.

2.2.2. Non-communicable diseases

The Institute for Health Metrics and Evaluation (IHME) (2018) reported that 60% of all deaths worldwide are caused by NCDs. Meanwhile, in the European Union (EU) this percentage goes up to 90%. If one were to look at the Maltese scenario, a *'Malta: Country Health Profile 2019'* document published by the Organisation for Economic Co-operation and Development (OECD) on Health Systems and Policies (2019), reported that cardiovascular diseases are the leading cause of death for both genders among the Maltese population. Another leading cause of death in Malta is diabetes mellitus which has marked an increase in mortality rates as of late (OECD, 2019). A major risk factor for the aforementioned NCDs is obesity which has increased drastically in children and adults over the past decade, with Malta currently having the highest rates across Europe (OECD, 2019).

To further complicate matters, these health problems such as diabetes mellitus and obesity, which were commonly diagnosed in older adults are now being detected at increased rates in young children and adolescents (Booth et al., 2012; Hills et al., 2015). In fact, research by Fenech et al. (2021) also confirmed that 42.6% of secondary school students are either overweight or obese. Obesity has a negative impact on health, and it is directly associated with sedentary behaviour, inactivity and health repercussions in youth (Society of Health and Physical Educators [SHAPE] America, 2013). Another major NCD is osteoporosis which has seen a significant increase from the 1990s (Shen et al., 2022).

In light of this, one modifiable risk factor for many of the diseases mentioned is physical inactivity. Indeed, PA and fitness are widely seen as essential methods for promoting health (Saqib et al., 2020).

2.3. The Role of School and Physical Education

Considering that children and adolescents spend a huge part of their day at school, educational institutions become the ideal setting to promote PA and build healthy habits for lifelong engagement, with the subject of PE playing a predominant role (Hills et al., 2015). This is further reinforced by Gea-Garcia et al. (2020), who argued that PE lessons have the potential to combat physical inactivity and the prevalence of

chronic diseases by helping students develop healthy habits and self-determination which influence the frequency of PA practice. Similarly, Blasquez Shigaki et al. (2020), stated that it is during the adolescent phase that critical fitness habits are formed. Consequently, health-related improvements and habits created during this phase have the potential to be sustained for lifelong involvement in PA (Blasquez Shigaki et al., 2020).

2.3.1. Aims for Physical Education programmes

Currently, PE is the only subject within the compulsory school curriculum that is responsible for helping students become competent and confident in their physical ability and to promote physical health. Therefore, PE must deliver the appropriate skills, attitudes and knowledge that help to sustain a healthy lifestyle (McLennan & Thompson, 2015).

Several authors agree that the main purpose of PE is to help students become more skilful, confident and knowledgeable in a range of physical activities and sports which ultimately influences long-term engagement in PA (MacNamara et al., 2011; Barney et al., 2015). This is substantiated by Bailey and Dismore (2006), who carried out a survey in fifty-two nations and concluded that lifelong PA was a universal goal. Other international and national documents also agree on what is the main purpose of PE. In their annual *'International Charter of Physical Education, Physical Activity and Sport'* conference, UNESCO (2015) established principles that PE programmes should encompass. Article 4 of the document states that PE programmes should promote and encourage lifelong participation.

Similarly, the Society of Health and Physical Educators (SHAPE) America, states that the purpose of PE is to help students become competent, confident and knowledgeable individuals in order to engage in PA for the rest of their lives (SHAPE America, 2015). To achieve this, SHAPE America (2015) affirm that to engage in lifelong PA, a physically literate individual:

- Has learned the skills necessary to participate in a variety of physical activities.

- Knows the implications and the benefits of involvement in various types of physical activities.
- Participates regularly in physical activity.
- Is physically fit.
- Values physical activity and its contributions to a healthful lifestyle.

(SHAPE America, 2015: p. 1)

2.3.2. National aims for Physical Education programmes

Similar to international aims, Maltese policies and frameworks also prioritise lifelong participation in PA as one of the main aims of PE. The *'Healthy Eating and Physical Activity'* document published by the Ministry for Education and Employment (2015) put forward the main aims of the policy which are as follows: (1) to prioritise PA through holistic education, (2) to have a school environment that encourages healthy habits through the promotion of PA and healthy food options, (3) to help youth become physically literate and to supply the right tools for students to make informed choices and foster a healthy lifestyle in the long term, (4) to make provision for a flexible curriculum which emphasises the importance of healthy eating and PA and (5) to send a consistent message to students regarding PA in schools (p.8).

The abovementioned aims are consistent with those stipulated by the National Curriculum Framework (NCF) (MEDE, 2012) which highlights how PE should aim to equip learners with the appropriate skills and knowledge that could enable youth to make healthy lifestyle choices. The framework maintains that the knowledge gained from PE lessons should help students exploit their leisure time well by taking up physical activities which they enjoy doing. Lastly, it also postulates that as a result of PE, students should be able to recognise the importance of fostering healthy habits and the long-lasting implications that it has on their health and well-being.

Despite the documented aims stipulated for PE and the potential for schools to influence students' health behaviour, literature on the topic asserts that most PE programmes fall short of achieving their main aim of promoting lifelong PA (Darst et

al., 2012; Barney et al., 2015). This is further reinforced by Quick et al. (2010) who found that over the years PE programmes have found it challenging to meet the objectives set by national and international bodies.

Research alludes to the idea PE programmes can reach their ultimate objective through an increment of PA and fitness which are positively correlated with a healthy and active lifestyle to achieve optimal health benefits (Poitras et al., 2016; Loviani et al., 2021). Similarly, Lang et al. (2019) argue that habitual PA is the most effective means to improve fitness levels. Hence, the practice and surveillance of PA and fitness in schools are crucial to provide health professionals with up-to-date information regarding chronic disease prevalence as well as preventive measures. Ortega et al. (2011), add that fitness monitoring is even more effective and accurate with regard to adolescent health levels than PA surveillance. Based on the aforementioned research, fitness becomes a relevant topic within the PE curriculum in promoting lifelong PA (Houston & Kulinna, 2014; Myers et al., 2015).

2.4. What is Fitness?

Fitness can be defined as a set of characteristics that individuals either possess or develop to enable them to engage in physical activity and be healthy (Lopez-Gil et al., 2020). According to Schutte et al. (2016), fitness is considered a fundamental requirement for individuals to partake in everyday activities with minimal effort as well as to appropriately participate in PA during recreation time.

Fitness can be further subdivided into two distinct categories which are ‘Health-Related Fitness’ (HRF) and ‘Skill-Related Fitness’ (SRF). The main focus of fitness for this study will be HRF whilst also touching upon specific components of SRF as established by the LOFs (MEYR, 2023).

2.4.1. Skill-Related Fitness

SRF components encompass six components that aid in athletic performance, including agility, speed, power, balance, reaction time and coordination (Jarani et al.,

2015). According to Jarani et al. (2015), there is a greater likelihood for people who demonstrate competence in skill-related fitness to also engage in fitness training.

Of special interest, this literature review will look at agility and speed since these components are incorporated within the LOFs of the topic of fitness. Agility can be defined as *"a rapid whole-body movement with change of speed or direction in response to a stimulus"* (Sheppard and Young, 2006: p. 922). Meanwhile, speed refers to *"the time taken to cover a specific distance"* (Jeffreys, 2013: p.1).

2.4.2. Health-Related Fitness

HRF is a multidimensional construct that constitutes five fitness components; cardiovascular endurance, muscular endurance, muscular strength, flexibility and body composition (Keating et al., 2018). Cardiovascular endurance refers to the capacity of the respiratory and cardiovascular systems to carry out prolonged physical activity (Cheng et al., 2019). Muscular endurance is defined as a muscle group's ability to repeatedly contract and produce force for a long period of time (Charles et al., 2018). Muscular strength is the amount of force that a muscle can produce with a single maximum effort, while flexibility can be defined as the range of motion at a joint (Smith et al., 2014). Lastly, body composition is used to describe the percentage of muscle, fat, bone, and water within the body (Kuriyan, 2018).

2.5. Factors Affecting Fitness

When it comes to an individual's physical fitness, it becomes evident that there is a significant variation in fitness levels among different people. This variability can be attributed to a multitude of factors, including body size, maturity status, gender and the amount of time spent engaging in PA.

2.5.1. Physical Activity levels

When looking at the HRF levels of adolescents and adults, one cannot disregard the influence of PA due to its direct correlation to HRF levels. PA is defined by the WHO

as *“any bodily movement produced by skeletal muscles that require energy expenditure that can be performed at varying intensities”* (WHO, 2022: p.2).

The importance of PA in improving fitness markers was stressed in a recent study carried out by Ługowska et al. (2023). Their research study looked at the effect of increasing the time spent performing PA at school on the fitness levels of middle-school girls and boys. This was achieved by comparing a group of students who carried out the same PA levels as before which was that of four hours with an intervention group who performed ten hours of PE lessons per week including team games and fitness exercises. Subsequently, the authors concluded that an increment of PA per week has the ability to improve the fitness performance of early adolescents. These results are in agreement with another study by Kolb et al. (2021) who reported that sufficient PA levels consequently improve physical fitness which is a significant indicator of health.

Similarly, other research studies highlight that adequate PA levels lead to improvements in specific health-related fitness components. These positive effects were reported on body composition, cardiovascular development as well as muscular fitness (Landry & Driscoll, 2012; U.S. Department of Health and Human Services, 2018).

2.5.2. Maturity and development

Apart from PA levels, fitness is influenced by other factors that relate to body size, maturity and growth status (Lopes et al., 2017). Biological maturation can be defined as the process of developmental changes that take place to promote human growth (Guedes, 2011). This transition from childhood to puberty is expressed by changes in body size, sexual maturation and physical ability (Santos et al., 2011). Confirming this view are Malina et al. (2004) who state that maturity markers have a direct impact on physical fitness. More specifically, maturity affects body composition, muscular strength and bone growth (Goswami et al., 2014). In line with this, students who mature early on may be at an advantage due to an increased level of fitness (Kail & Cavanaugh, 2023).

2.5.3. Gender influences

Perhaps one of the biggest predictors of fitness ability is gender. According to empirical studies, males exhibit higher levels of fitness in HRF components in comparison to females (Gea-Garcia et al., 2020). Similarly, Ługowska et al. (2023) found that boys measured higher scores in their fitness tests than girls. These scores are due to a number of factors but mainly it is the result of increased testosterone levels in males during puberty as well as larger muscles (Handelsman et al., 2018).

2.6. Health-Related Fitness within the PE Curriculum

At the outset, within a school setting, HRF refers to *"the teaching of knowledge, understanding, physical competence and behavioural skills, and the creation of positive attitudes and confidence associated with current and lifelong participation in physical activity"* (Harris, 2000: p. 2). This statement suggests that HRF within the PE curriculum should equip students with the appropriate skills and competencies required for current and ongoing involvement in PA (Harris, 2000).

The components of HRF can be taught in a variety of approaches, each with its own advantages and disadvantages. Firstly, there is the permeated/integrated approach which is the integration of HRF components through other sports or physical activities. For instance, highlighting the component of muscular strength during a gymnastics lesson. The focused/discrete approach is the delivery of fitness concepts through a block of work within the PE curriculum where HRF components are the main topic. Similarly, there is also the topic approach which comprises both practical and theoretical lessons on different topics referring to concepts and components of HRF. Lastly, the combined/multi-method approach as the name implies is the combination of the aforementioned HRF delivery approaches (see Figure 2.1) (Harris, 2009).

(Harris, 2009: p. 86)

Approach	Strengths	Limitations
Permeation/integration An integrated approach in which HRE is taught through the PE activity areas (i.e. through athletics, dance, games, gymnastics, swimming, and outdoor and adventurous activities).	HRE knowledge, understanding and skills can be seen as part of and integral to all PE experiences. Children learn that all physical activities can contribute towards good health and can become part of an active lifestyle.	HRE knowledge, understanding and skills may become 'lost' or marginalised amongst other information relating to skills and performance; there may be an overload of information for pupils; much liaison is required to ensure that all pupils receive similar information from different teachers; the approach may be somewhat ad hoc and piecemeal.
Focused/discrete An approach involving teaching HRE through specific focused lessons or units of work either within PE or health education programme. During PE lessons, the main focus is the learning concept rather the activity itself.	A specific focus can help to ensure that HRE does not become lost or take second place to other information; there is less likelihood of HRE being regarded as an assumed 'by-product' of PE lessons; HRE is perceived as important through having its own time slot and identity; the value and status of the associated knowledge, understanding and skills is raised.	HRE may be seen in isolation and not closely linked to the PE activity areas; the HRE knowledge, understanding and skills may be delivered over a period of time with long gaps in between which is problematic in terms of cohesion and progression (e.g. one short block of work per year); the knowledge base may be delivered in such a way as to reduce lesson activity levels (e.g. through 'sitting down' lessons with too much talk).
Combined/multi-method Any combination of permeation, focused and topic based approaches is possible.	A combination of approaches can build on the strengths of different approaches and, at the same time, minimise their individual limitations; it can ensure that value is placed on HRE and that the area of work is closely linked to all PE experiences and other health behaviours.	Combined approaches may be more time consuming initially to plan, structure, implement and co-ordinate within the curriculum.
Topic An approach involving a series of lessons following a specific topic or theme that is taught through PE and classroom lessons. This may incorporate both permeation and focused units.	HRE may be delivered in a more holistic manner with closer links to other health behaviours (such as eating a balanced diet) and other national curriculum subjects. The area can be covered in more depth and be closely related to pupils' personal experiences. The amount of time engaged in physical activity in PE lessons might be increased if introductory and follow-up work is conducted in the classroom.	A topic or theme-based approach may be more time consuming with respect to planning. This approach could be less practically orientated than other approaches (if it incorporates a high degree of classroom based work).

Figure 2. 1: Approaches to teaching HRF

In school-based PE programmes, HRF is frequently monitored through the use of a fitness test battery. This is commonly measured by a group of fitness tests that accurately stimulate the physiological demands of the different fitness components (Bianco et al., 2015).

2.7. The relevance of Health-Related Fitness

HRF and its components have been recognised as important predictors of future health outcomes (Smith et al., 2014). Indeed, satisfactory fitness levels have a high correlation with improved bone strength, and mental health and have the ability to prevent obesity as well as other cardiovascular diseases (Ruiz et al., 2009).

2.7.1. The correlation between Physical Activity and HRF

A body of research has identified the direct correlation that exists between PA and physical fitness (PF) (Fang et al., 2017; Lopez-Gil et al., 2020). Studies have shown that the amount of PA practice influences physical fitness levels and the health of individuals (Dumith et al., 2011; Rauner et al., 2013). Likewise, PA seems to be affected by the PF levels in school children since a high PF level is directly proportional to higher PA (Fang et al., 2017; Falzon & Taliana, 2019). This is attested by Schutte et al. (2016) who stated that a good level of PF may result in increases in PA practice and engagement. Ultimately, many researchers agree that the interaction between PA and fitness has a significant influence the health of individuals, particularly children and adolescents (Fang et al., 2017; Palou et al., 2019; Riso et al., 2019).

2.7.2. Fitness for Health

A wealth of empirical evidence has verified that sedentary living leads to a number of chronic diseases (Gonzalez et al., 2017; Zhao et al., 2020). Consequently, improving health-related physical fitness is crucial in improving health markers and preventing NCDs such as obesity, Coronary Heart Disease (CHD) and diabetes among others (Berge et al., 2019).

For instance, in their study, Berge and colleagues (2019) found that a higher baseline of cardiovascular fitness was related to a considerably larger weight reduction in individuals with severe obesity. Confirming this is another study by Geraghty et al. (2023) who affirmed that children who had high levels of cardiovascular endurance exhibited lower levels of overall and abdominal adiposity. Similarly, superior muscular strength in childhood to adolescence is associated with the prevention of excess

adiposity, lower risk of insulin insensitivity and cardiovascular disease (Benson et al., 2006; Grøntved et al., 2015).

2.7.3. The link between Lifelong Physical Activity trends and HRF

Evidence indicates that the lifelong PA that most adolescents and adults engage in activities such as resistance training and running which are typically carried out either individually or in small groups (U.S. Department of Health and Human Services, 2008). This is reinforced by the Sports and Fitness Industry Association (SFIA) (2020) which reported that the most common physical activities pursued by adults were fitness-related (see Figure 2.2).

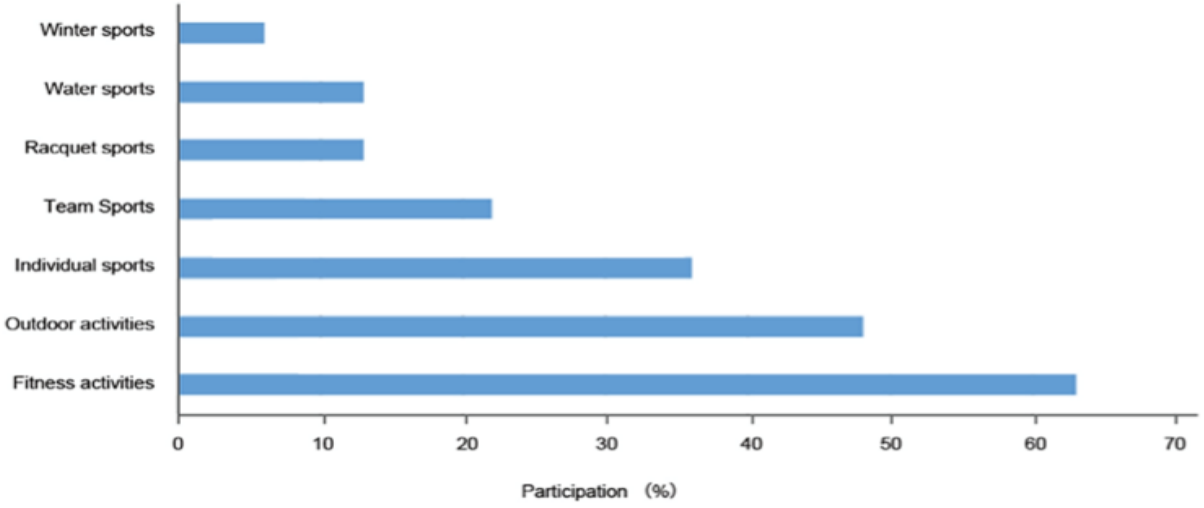


Figure 2. 2: Adult participation trends in physical activities

(Sports and Fitness Industry Association (SFIA), 2020)

Unfortunately, many people will not take the step to join gyms or clubs due to a lack of physical competence and fear of embarrassment (Darst et al., 2012). The latter statement is further reinforced by a study carried out by Green (2014), who asserted that given the absence of emphasis on alternative physical activities in the general PE and school sports programs, many youths may be unable to sustain a physically active lifestyle beyond their academic years. Therefore, it may be argued that team sports and activities have little carryover benefits into adulthood (Barney et al., 2015). In addition, Zhang et al. (2021) reported that the majority of middle school students lack

enough knowledge to carry out physical activities that could improve their fitness levels. Consequently, the authors concluded that the inability to take part in fitness-enhancing physical activities may be due to a lack of fitness knowledge.

Based on the abovementioned literature, youth should be provided with a solid foundation of knowledge, competence and skills related to lifetime participation in PA (Ferkel et al., 2017). A study carried out by Stodden et al. (2012) reinforces the importance of equipping students with the appropriate knowledge that could sustain lifelong participation in PA. Through their study, the researchers examined health-related fitness knowledge (HRFK) in students by utilising the FitSmart test, with the results clearly indicating that HRFK has a positive impact on physical fitness levels (Stodden et al., 2012). Therefore, it may be postulated that it is of crucial importance that students are exposed to HRFK during their PE lessons. The latter is further attested by Chen et al. (2018) who through their study demonstrate that higher HRFK is directly proportional to better fitness levels and increased PA engagement.

Moreover, other studies have also proved that a strong base of fitness habits and knowledge mastered from a young age is more likely to persist through adulthood and ultimately increase PA among adults (Craigie et al., 2011; Högström et al., 2016). In addition, through their study, Sun et al. (2012) found that students had stronger ownership of new information and activities as they built a deeper personal connection to the subject area when actual learning challenges that promoted life-long HRF were included within the PE curriculum.

2.7.4. Fostering positive attitudes towards lifelong Physical Activity

According to Araújo and Dosil (2015), attitude “is one of the most important predictor variables in relation to behavioural intentions regarding physical activity” (p. 344). Hence, since attitude is one of the most significant predictor factors for PA, it is critical to examine the impact of the PE curriculum on diverse students.

Ferkel et al. (2019) argue that a team-sport-based curriculum might give less developed or athletically inclined students an unpleasant PE experience. As a consequence, some boys and most girls (McSharry, 2017), may become disinterested

in PE since they start believing that if they are not proficient in sports and games, fitness and health are not for them (Ferkel et al., 2019). Mitchell et al. (2015) argued that the current male-dominant PE curriculum leaves much to be desired since it does not provide enough options for students to choose from. Furthermore, a study by Wilkinson and Bretzing (2011) found that 47% of the girls in their study chose fitness units over sports since fitness activities are usually done individually without any competition involved and can take place anywhere. In agreement with this, a study by Hill and Cleven (2005) affirms that team sports are viewed as violent and male-dominated by girls, who as a consequence lose the desire to participate in PE.

The different sport preferences between males and females (Best et al., 2010) poses an issue for local secondary schools to foster positive attitudes since they switched to a co-educational system in recent years (Dalli, 2013a). In fact, a study carried out by Best et al. (2010) reported that girls are more likely to participate in single-sex PE lessons. Another finding from this study was that PE teachers regard single-sex PE lessons as being more effective in motivating their students and fulfilling their needs.

Akinci and Kirazci (2022), argue that to meet the demands of students, the effectiveness of PE courses in terms of acquiring positive health behaviour patterns must be adjusted through Health- Related Fitness Physical Education (HRFPE). The Self-Determination Theory (SDT) has been used in a variety of social sciences, including sports, exercise, and physical education (Standage & Ryan, 2012). According to SDT principles, social-contextual dynamics may influence people's motivation by meeting three basic needs: autonomy, competence, and relatedness (Standage & Ryan, 2012). A well-designed HRF curriculum has the potential to tick all these boxes as it could help students experience personal progress by focusing on mastery rather than performance (Louw et al., 2016).

Further to this, the main elements that make up an effective HRF programme include setting goals, self-monitoring, experiencing outcomes and ultimately tweaking the goals for an improved fitness outcome (Houston & Kulinna, 2014; Mercier et al., 2016). In this regard, the aforementioned characteristics help to meet the three psychological demands of SDT (Akinci & Kirazci, 2022). Other studies have revealed that an HRF curriculum that meets SDT demands has varied benefits such as an increase in

interest, curiosity, and care and helps sustain intrinsic motivation which all help to foster positive attitudes towards PE and fitness (Langdon et al., 2014; Jaakkola et al., 2015).

2.8. Health-Related Fitness Models

The abovementioned information regarding student motivation and the link between PA and HRF highlights the responsibility that PE programmes have to appropriately help students foster healthy lifestyles. Therefore, PE programmes need to take into account the importance of providing suitable learning models for enhancing students' physical activity and fitness, since being physically fit gives kids greater confidence to engage in activities that will improve their lives (Loviani et al., 2021).

2.8.1. Health-Related Fitness Model

Loviani et al. (2021) carried out a study which sought to test the impact of implementing an HRF model on physical progress and PA habits. The HRF model is based on the premise that the foundation of a healthy lifestyle is physical activity. As a result, in order for individuals to have the ability to carry out proper physical activity requires an understanding of physical fitness.

The health-related fitness model has a five-stage objective that corresponds to the growth and development of pupils. Firstly, exercising frequently entails developing personal habits that you can practise on a regular basis and that you may enjoy. Secondly, developing realistic personal physical fitness objectives and understanding fitness standards for health-related physical fitness components. Thirdly, physical fitness patterns include deciding on one's own activities and assessing workouts and workout programmes. Fourthly, assessing one's fitness and interpreting test findings are also parts of self-evaluation. Finally, the last step involves problem-solving and decision-making skills such as creating a physical fitness plan and being a skilled doer. The traits of the HRF model include an emphasis on knowledge, attitudes, and behaviours as well as a continuous programme of activities, frequent testing, and individual evaluation (Loviani et al., 2021). According to the results of this research,

students who used the health-related fitness (HRF) model saw greater improvements in their physical fitness than those who used conventional approaches (Loviani et al., 2021).

2.8.2. Conceptual Physical Education

The term Conceptual Physical Education (CPE) refers to a block of a unit of work or semester-long theoretical and practical lessons that concentrate on promoting lifelong PA by delivering health-related knowledge to students. The content of a CPE programme normally includes: (1) the benefits of a healthy lifestyle, (2) knowledge on how to enhance HRF through regular exercise, (3) training principles, (4) goal setting, (5) self-management, and (6) opting for healthy choices. Ultimately, the content delivered during the theoretical lessons is reinforced through PE lessons within that same unit (Corbin, 2021).

One CPE programme that has left its impact on various age groups is the *'Fitness for Life*' PE curriculum model by Corbin et al. (2018). This model has three programmes; each one incorporates activities that are developmentally appropriate and that educate students to adopt healthy habits (Houston and Kulinna, 2014).

The effectiveness of CPE programmes is reinforced by various research studies carried out both at middle school and high school levels. Project Active Teen (PAT) is a 20-year longitudinal study that started in 1991 and investigated the effects of a CPE programme using the *'Fitness for Life'* textbook on ninth-grade students. As 11th and 12th graders, the same cohort of students was investigated again to evaluate their PA (PAT1) (Dale et al., 1998). Findings from this study showed that the intervention group were comparatively more likely to be active and reach the PA recommendations than students who took part in normal PE lessons. Another follow-up study was then carried out eighteen months following the students' high school graduation (PAT2) and the results were similar to that of PAT1 (Dale and Corbin, 2000). The last follow-up study (PAT3) took place twenty years after the students' high school graduation in order to see the long-term implications, if any, of the CPE programme (Kulinna et al., 2018). The findings from this study confirm that when compared to their peers, former CPE

students participated in more PA and there was a lower occurrence of physical inactivity and SB. These results confirm that CPE leaves a long-lasting impact and is beneficial in promoting lifelong PA (Kulinna et al., 2018).

Similar findings were reported in a middle school intervention study called the 'Science of Healthful Living' (SHL) curriculum, which was implemented by Wang and Chen (2019). The curriculum tackled health, fitness and nutrition topics that were taught in 120 lessons and complemented with PA lessons. Interestingly, the same group of students who were investigated two years following the beginning of the study and participants in the SHL group showed greater levels of PA outside the school premises compared to the students who simply took part in normal PE lessons (Wang and Chen, 2019).

2.8.3. The Public Health Approach

The 'Public Health Approach' (PHA) was created with the intent of helping students develop physically active behaviours inside and outside of the school premises. Another popular term is 'Health-Optimising Physical Education' which is a PE curriculum that integrates PE with health education by promoting skills and habits that could help students to lead a healthy lifestyle (Sallis et al., 2012). Lessons based on the HOPE approach focus on HRF and PA in order to help students achieve at least 50% of the lesson at MVPA levels (Sallis et al., 2012).

One programme that takes on such an approach is the '*Sports, Play and Active Recreation for Kids!'* (SPARK); a research-based curriculum that focuses on knowledge and skill acquisition required for students to ultimately engage in lifelong PA (Mostafavi et al., 2013). The SPARK model involves a 30-minute lesson divided into two parts, starting with health-related fitness exercises and then followed by skill-related fitness exercises and this is done with the aim to increase the time spent in MVPA (Mckenzie et al., 1995). A meta-analysis carried out by Lonsdale and colleagues (2013), seems to resonate with this as the findings from their study suggest that PE programmes that include fitness activities have the potential to significantly improve MVPA levels.

A research study by Sallis et al. (2012) found that students who were taught by the SPARK curriculum recorded improved fitness levels and sports skills. Besides the student benefits recorded, improved teaching quality was also noted (Sallis et al., 2012). Another research study indicated that students who underwent the SPARK intervention increased their PA levels (Locke & Lambdin, 2003).

2.8.4. The Health Club Approach

Pangrazi (2010) created the Health Club approach where school PE mimics a health club environment where students have access to fitness club equipment and also have the freedom to choose from a wide range of modern physical activities.

A pilot study carried out by McNamee et al. (2016), investigated the effect of a health club approach on high school female students. The intervention spanned over fourteen weeks with two or three lessons taking place per week for 90 minutes. The content of the lessons incorporated various important aspects of successfully attending a gym, such as goal setting, proper use of equipment, gym etiquette and HRF testing. Additionally, the lessons tapped all of the health-related fitness components and the students had the option to choose which component they wanted to prioritise in a particular lesson. Finally, the last 20 minutes of every lesson were designated for all the students to do together such as Yoga or Pilates (McNamee et al., 2016). Ultimately, the study looked at health club outcomes in relation to HRF, PA, self-efficacy and self-esteem. Findings obtained from this study show that such an approach could be implemented effectively in secondary schools. Indeed, the health club approach proved to be effective in achieving high MVPA.

2.9. Fitness Testing

HRF is commonly measured in school-based PE programmes (Bianco et al., 2015), however, Mercier and colleagues (2016) argue that more broad investigations should be carried out regarding the implementation of fitness tests by PE teachers. Consequently, research about teachers' methods of fitness assessment in schools is scarce (Cale et al., 2014), especially in countries that do not have a standardised HRF monitoring protocol like Malta. Meanwhile, other countries have devised standardised test batteries including Fitnessgram® (United States), CNPFT (China), ALPHA (European Union), GTO (Russia), SLOfit® (Slovenia) and Netfit® (Hungary) (O'Keeffe et al., 2020).

2.9.1. The purpose of Health-Related Fitness Testing

Originally, fitness testing in schools used to be implemented with the sole purpose of assessment. Although its use has been prominent throughout the years, several research studies have highlighted that fitness testing may contribute to the culture of performance that several assert has surrounded educational systems in the past few years (Cale et al., 2014; Alfrey & Gard, 2017). Besides this, Keating et al. (2020) also pinpoint other challenges that arise when it comes to fitness assessment and these include privacy concerns, misapplication of assessment results and time-consuming assessment which take away from the lesson.

Nevertheless, if fitness testing is implemented properly, Cale et al. (2014) affirmed that it could play a significant role in promoting and educating youth about health and fitness. This statement is consistent with the view of Csányi and colleagues (2015), who postulated that HRF monitoring should be included within PE programmes to enrich the educational experience of students as well as from a public health viewpoint. Indeed, through their research, Miller et al. (2016) found that fitness testing could be used as a means of motivation for students to take part in greater physical fitness activities. Further to this, it was suggested by Mercier and Silverman (2014a) that when students become familiar with the tests, it aids in preparing them for lifelong fitness following their compulsory school years. Other purposes of fitness testing include:

- Developing skills in goal setting, self-monitoring and self-testing.

- Evaluating fitness programmes.
- Screening pupils for health issues.
- Diagnosing fitness needs for individual exercise prescription and improvement.

(Cale & Harris, 2009b: p. 59)

2.9.2. Strategies to implement Health-Related Fitness Testing

In order to perform fitness tests effectively, it is recommended that teachers refrain from using the conventional command-style test administration and instead utilise more student-centred approaches such as peer assessment and self-assessment (Graser et al., 2011). As a result, given that these assessment forms require students to become familiar with the tests, it aids in preparing them for lifelong fitness following their compulsory school years (Mercier & Silverman, 2014a). In addition, Mahar and Rowe (2008) recommend teachers to utilise a criterion reference health standard rather than a norm-based standard. Furthermore, it was suggested that fitness assessments should not be done in isolation, but rather implemented within the fitness unit as part of the learning process (Wiersma & Sherman, 2008). Lastly, Morrow and Ede (2009) also recommend that students should familiarise themselves with the fitness assessment processes prior to performing the tests.

2.10. The Local Scene

Data by Weedon et al. (2022), indicates that there has been a decline in adolescent HRF measures over the years. Locally, there are limited research studies and data regarding the HRF levels of adolescents. One study dates back to 1998 and was carried out by Aquilina who found that the fitness levels of Maltese secondary students lagged behind in comparison to students from other European countries.

The other study was a small-scale research by Falzon and Taliana (2019) who assessed the HRF levels of a sample of 117 Maltese middle school students using the FITNESSGRAM battery guidelines. The data obtained was then compared to the FITNESSGRAM norms where each fitness test can be expressed through three

categories which are: Healthy Fitness Zone (HFZ), Needs Improvement Zone (NIZ) and Needs Improvement-Health Risk Zone (NI-HRZ). Firstly, the study reported that the fitness level of boys was superior to the girls' in all fitness components except for flexibility. In addition, the mean BMI of all students who were tested fell under the HFZ. Similar results were reported for the sit-up test which assessed muscular endurance since the mean results that were obtained from both genders and age groups, classified under the HFZ. Meanwhile, muscular strength which was tested through the push-up test elicited mixed results, with 12-year-old boys and 11-year-old girls not managing to reach the average score of ten repetitions and seven repetitions respectively. Flexibility test results both for male and female participants fell in the NIZ since they did not manage to reach the average of 5.32cm and 10.4cm respectively. Finally, in the multistage fitness test that measured the student's aerobic capacity, both genders and age groups were classified under the NI-HRZ (Falzon & Taliana, 2019). The mixed results gathered by this study indicate that there is room for improvement in most fitness tests carried out by local middle-school students since they did not manage to meet the FITNESSGRAM norms in three out of five tests.

2.10.1. The Fitness Curriculum in Maltese Middle Schools

The LOs provide a prescriptive framework of physical activity areas and sports alongside their respective content and assessment practices to be carried out during each of the primary, middle and secondary school years (MEYR, 2023).

Health-related fitness within the LOs is not mentioned on its own but rather its components are included under the umbrella term of 'Fitness'. Besides the components of HRF, the topic of fitness also tackles speed and agility which make up part of SRF. It is also noteworthy to point out that body composition is not mentioned within the LOs.

Furthermore, the topic of fitness finds itself at the forefront of the new LOs as teachers are required to deliver it through a discrete approach. The framework suggests that fitness should be taught through a variety of physical activities, namely:

- Thro’ sports
- Calisthenics
- Obstacle Course Racing
- Pilates
- Yoga

Additionally, fitness is given the highest priority with regard to assessment since it carries 40% of the global assessment mark for general PE. It is regarded as the most important area because ultimately it will be the student’s responsibility to maintain and take care of their fitness during their schooling years and in adulthood (MEYR, 2023). Nevertheless, although assessment is recommended, there are no clear guidelines regarding the type of fitness assessment that should be carried out.

As of yet, research on the topic of Fitness and the LOs’ impact on the PE teacher’s interpretation and instructional practices in the Maltese context has not been carried out. In this regard, the gap in local research highlights the importance of understanding the links between lifelong PA and HRF as well as effective HRF instructional practices that could lay a proper foundation for lifelong PA.

2.11. International Health-Related Fitness studies

A major study which provided a clear insight into the implementation of health-related exercise (HRE) practices in secondary schools was the 1997 “Physical Education: A Picture of Health? The Implementation of Health-Related Exercise in the National Curriculum in Secondary School in England” by Jo Harris. Following the implementation of England’s National Curriculum for Physical Education (NCPE), this study sought to explore how HRE is viewed and taught by secondary school PE teachers as part of the PE curriculum. The second aim of the study was to pinpoint any influences that may affect how HRE is implemented in England’s secondary schools. In order to achieve this, the research design comprised a mixed-methods approach which involved a national survey for the Head of Departments (HoDs) of PE.

The second part of the investigation involved case studies which were held in state schools all over England.

Results from this study indicated that the conventional games model still prevailed in the PE curriculum. Meanwhile, conceptual ambiguity persisted with respect to the multifaceted nature of HRE and its correlation with PE, health and fitness. Another finding was that health-related matters such as the benefits of regular exercise and the monitoring of personal programmes were neglected and lacked a cohesive structure. Some factors that influenced the type of approach utilised were: “school and individual characteristics, contextual constraints and prevailing ideologies” (Harris, 1997: p. i).

Alfrey, Cale and Webb (2012), looked into the experiences and perspectives of English secondary physical education teachers about health-related exercise (HRE) and related continuing professional development (CPD). A two-phase, mixed-method study was used to conduct the research. Phase one involved a survey questionnaire, while semi-structured interviews were conducted in phase two. According to the researchers, the semi-structured interviews provided an opportunity to expand upon, clarify and add meaning to the questionnaire findings. The participants for the questionnaire were chosen through random stratified sampling and 124 PE teachers were ultimately selected. Meanwhile, 12 participants were drawn from the original broader sample through the use of purposive sampling. Most teachers involved in this study expressed dissatisfaction with how their initial teacher training had inadequately equipped them for teaching HRE. The authors emphasised the necessity for strategic, comprehensive, and long-term actions to address the challenges associated with HRE across all educational levels. It urges PE professionals to critically evaluate their practices and ideologies, advocating for a reexamination of established norms within the field.

2.12. National Health-Related Fitness studies

Local studies mostly looked at the fitness levels of primary, middle and secondary school students using established fitness batteries (Aquilina, 1998; Aguis, 1999;

Galea, 1999; Ellul et al., 2002; Falzon & Taliana, 2019). Meanwhile, Mifsud (2004) investigated the effect of the implementation of an HRF unit using a practice-based learning approach. The goal of this study was to give students the chance to acquire fundamental information, understanding and skills regarding HRF that could guide them in making informed decisions when it comes to fostering a healthy lifestyle and on the SEC PE curriculum. In the first stage of the research study, experimental teaching modules and related worksheets for the HRF curriculum were developed. Subsequently, these HRF units were employed in the school setting where students were tested prior to the units and after. Findings from this study revealed that Form 1 and Form 2 pupils significantly improved their knowledge on the definition of health; personal hygiene and safety, factors affecting health; diet and nutrients; speed; power; agility; flexibility; cardiovascular endurance; muscular strength and endurance, as well as body types and factors affecting performance." (p. ii).

The aforementioned studies highlight a significant gap in local research with regard to the implementation of fitness programmes in middle schools. Although there is a growing recognition of the importance of promoting physical activity and health among students, there is limited existing research on the specific strategies and practices employed within Maltese schools. This research gap hinders the development of evidence-based approaches tailored to the local context. Consequently, this gap has spurred the motivation behind the present study, aiming to bridge the void and contribute valuable insights. This present research study holds significant importance as it has the potential to draw attention to HRF components within the LOFs. Moreover, it can establish a solid foundation and informed framework from which professionals in the field of PE can engage in discussions regarding the role of PE and HRF in promoting PA and improving the health status of young individuals. By addressing this deficiency, the current research study seeks to enhance the understanding of the subject matter specific to the local context and provide a foundation for future studies in Malta.

2.13. Conclusion

To conclude, this chapter discussed the definition of fitness and present-day health concerns which have increased in recent years due to a rise in physical inactivity and SB as well as their association with low fitness levels. The sections in this chapter

have outlined the aims of PE and consequently the relevance of implementing an HRF programme within the PE curriculum. Furthermore, it also looked at research studies that implemented HRF interventions in schools alongside suggestions on what the topic within the PE curriculum should include. Lastly, this chapter presented the fitness programme being implemented locally as well as in other countries. The following chapter addresses the methodology and discusses the research design in depth as well as the analysis employed to meet the study's objectives.

CHAPTER 3 – METHODOLOGY

3.1. Introduction

This chapter presents a comprehensive account of the employed research methodology. It commences by outlining the aims, objectives, and research questions guiding the research study. The chapter subsequently delves into the ontological and epistemological positions adopted by the study. Moreover, it elucidates the research

design and methodologies utilized to achieve the study's objectives, encompassing the identification of research instruments, participant selection, piloting, and data collection procedures. Additionally, the chapter expounds upon the data analysis process employed in the study. Finally, ethical considerations underpinning the research conduct are also addressed.

3.2. Aims and objectives

Having worked in the fitness industry, the researcher had the opportunity to meet a lot of individuals who are sceptical to join the gym or carry out any sort of physical activity because they do not feel competent or knowledgeable to do so. Based on the aforementioned, Fitness within the PE curriculum becomes a relevant topic in instilling such competencies.

Locally, very little is known about the topic being researched. Indeed, the researcher carried out a scoping review in order to locate any local literature and there is surprisingly a dearth of local research related to the topic of HRF in schools. Therefore, the purpose of this study is to determine instructional practices that PE teachers utilise, if any, when teaching Fitness and whether there are any influences that impact their pedagogical choices. Ultimately, the data collected by local middle-school PE teachers will be analysed and compared to HRF models employed in other contries as well as other scientific recommendations, with the intent to determine the strengths and weaknesses of local PE programmes in delivering HRF concepts.

Consequently, the main research questions that this study aims to address are:

1. How is the Health-Related Fitness (HRF) component within the PE curriculum interpreted and delivered by middle school PE teachers?

2. What factors may influence the delivery and instruction of HRF in middle schools in Malta?

The study's emergent findings should aid to increase understanding of the value of the effective implementation of an HRF programme in schools. Further to this, the findings should help in providing a clearer understanding of appropriate and effective instructional practices to successfully implement HRF within the PE curriculum which can serve as a guide to key stakeholders.

3.3. Ontology and Epistemology

A critical aspect of educational research is the underpinning philosophy that guides the research study. The two main variables influencing the research design are the researchers' ontological and epistemological views (Keser & Köksal, 2017).

Ontology is concerned with understanding ‘’the form and nature of the social world". Epistemology is the philosophical study of knowledge. The key questions in the philosophy of science are whether the result of scientific investigation is knowledge and the extent to which scientific beliefs are true (Allmark & Machaczek, 2018). Realism, positivism, constructivism and pragmatism are all examples of philosophical approaches that will help the researcher to advance to the defined question: "How can what is assumed to exist be known?" (Waring, 2017: p. 16).

A pragmatist approach will be used in this proposed study. Pragmatism does not belong to one specific philosophical position, instead, it contends that the specific philosophical stances between interpretivism and positivism must be eliminated because it perceives reality as both singular and multiple (Creswell, 2007). Consequently, researchers that take a pragmatic approach have the freedom to utilise any research methods that can provide the most accurate answers to their research answers (Creswell, 2007). Similarly, Feilzer (2010) agrees that the most significant question is whether the research has assisted the researcher in discovering what he or she wants to know. This epistemological position was deemed to be optimal in relation to this study because essentially, the pragmatist approach uses a mixed-methods approach, with quantitative research approaches used to elicit objective findings by employing tools like surveys. Meanwhile, qualitative research approaches

help the researcher to comprehend the issue through indicative results by examining through instruments like interviews (Dawadi et al., 2021).

3.4. Research design

Research design is an essential part in any research since it aids in providing a suitable structure to the study (Kothari, 2004). According to Cohen et al. (2018), the research design of a study must be determined by the underpinning objectives and research questions. This study aimed to investigate current HRF approaches adopted by PE teachers whilst exploring the underpinning reasoning and influences behind thier instructional practices.

In order to meet these objective, a mixed-methods approach has been opted for. The latter refers to the collection and integration of quantitative and qualitative data. A combination of qualitative and quantitative data can help the researcher obtain a deeper understanding of the problem in order to generate in-depth information (Creswell, 2016). It is also noteworthy to point out that this approach helps to amalgamate the strengths of each method while compensating for their deficiencies (Johnson & Onwuegbuzie, 2004).

One stage of the study consisted of an online questionnaire. The questionnaire is a popular and effective tool for gathering data since it provides structured and organised data which is straightforward to analyse (Queirós et al., 2017). This method was chosen because it provides a quantitative representation of current practices, attitudes and perspectives of the targeted population (Fowler, 2014). Hence, in the current study, the questionnaire will help to shed light on fitness practices and monitoring during PE lessons as well as its prominence within the PE curriculum in local middle-schools.

Moreover, the qualitative portion of the study helped to provide in-depth information through descriptive and narrative data that complements the quantifiable data derived by the questionnaires. To achieve this, semi-structured interviews were opted for with the intent to allow teachers to speak freely and set the tone of the interview, rather

than restricting their perspective. In this manner, the qualitative reasearch was chosen for this portion of the study since the teachers views on the topic and practices are subjective and vary from one individual to the next (Delamont, 2012).

Therefore, this study employed a convergent parallel design where the researcher carries out the qualitative and qauntitative research methods simultaneously during the research process stage. Additionally, this design equally values the data derived from both research methods by analysing the methods separately to ultimately interpret the findings jointly (see Figure 3.1) (Creswell & Pablo-Clark, 2017). Consequently, the comparison between data derived from quantitative and qualitative methods helps the researcher to obtain in-depth understanding of HRF practices and influences in local middle-schools (Demir & Pismek, 2018).

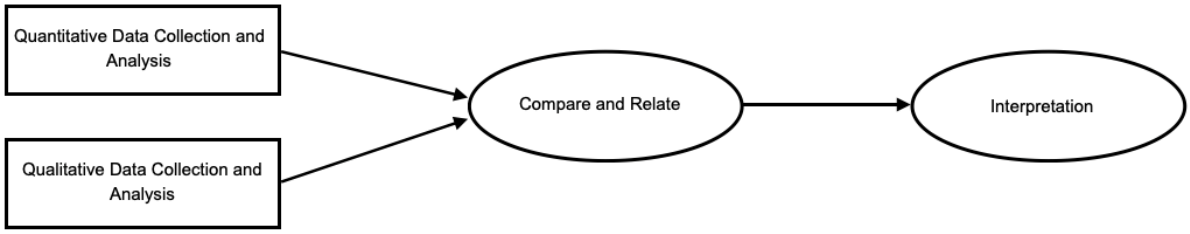


Figure 3. 1: Convergent Parallel Design

3.5. Sampling techniques

According to Cohen and colleagues (2018), the quality of a research study is not only determined by choosing a suitable methodology and research design, it also depends on choosing the appropriate sampling technique. In line with this, Andrade (2020) added that the sample population should be properly represent the whole population.

3.5.1. Selection of participants for the Questionnaire

The recruitment of participants for the questionnaire in this study targeted middle-school PE teachers. Convenience and snowball sampling techniques were employed, primarily through social media platforms. The online questionnaire was designed to gain insights into Fitness practices among local middle-school PE teachers.

Consequently, convenience sampling was deemed appropriate, as it assumes homogeneity among participants, ensuring that using a different sampling technique would not significantly affect the results, since it would still reflect the prevailling Fitness teaching practices in schools (Etikan et al., 2016).

The questionnaire was carried out using Google Forms. Convenience sampling involved reaching out to middle-school PE teachers who were first identified using pre-existing connections. A link guiding the participants to the questionnaire via Google Forms was sent out to the participants who were readily available and accessible through social media platforms and email and it was also shared on my social media platforms. This approach allowed for a convenient and efficient way to gather a pool of potential participants.

Additionally, snowball sampling was utilised, whereby initial participants were encouraged to share the link of the questionnaire with other middle-school PE teachers (Heckathorn et al., 2011).

3.5.2. Selection of participants for the Interviews

The study's participants comprised four PE teachers and two HoDs of PE, representing local middle-schools from church, state, and independent sectors. The recruitment of participants was carried out using convenience sampling, which was considered adventageous due to the practical criteria required for selection. This sampling technique facilitated easy access and contact with willing participants who met the required criteria (Dörnyei, 2007), rendering it a cost-effective and straightforward method compared to other sampling approaches (Battaglia, 2008). For the recruitment of the four PE teachers, an information letter was distributed via email to ten PE teachers, and the first four who expressed interest were selected. The two HoDs were selected based on a pre-existing personal acquaintance.

3.6. Methods of data collection

Data collection is an essential aspect of the research study since it helpes the researcher reach the objectives of the study (Taherdoost, 2021). Conversley, inaccurate data collecting tools and can leave a negative impact on the study's findings, rendering them invalid (Pratt & Loizos, 1992). Therefore, after carefully considering the aims of the current study, the researcher opted for a mixed research approach. The two data collection tools chosen for this research study were a questionnaire survey and face-to-face semi-structured interviews.

3.6.1. Questionnaire

Gay and colleagues (2011), define a questionnaire as "a written collection of survey questions to be answered by a selected group of research participants" (p. 177). This data collection method is claimed to be one of the most efficient tools (Zikmund, 2000) to capture the frequency of attitudes, practices and opinions in numerical form (Rowley, 2014). One advantage of questionnaires is that it makes data collection from a great number of respondents more efficient, rendering the findings more generalisable (Rowley, 2014). Nevertheless, researchers agree that the questionnaire schedule must be appropriate and user-friendly for the respondents (Rowley, 2014; Rahi, 2017). Hence, certain steps were taken into consideration during the development of the questionnaire and its administration.

The web-based questionnaire utilised in this study was developed with the intent to help the researcher gain a better understanding of the current HRF teaching practices within the PE curriculum. Questions about the HRF content implemented, its approach, monitoring practices, facilities and equipment available, teacher training, students' and teachers' perceptions regarding the topic were asked (see Appendix 4).

3.6.1.1 Piloting the Questionnaire

Piloting the questionnaire serves a variety of purposes, but the main goal is to determine the content validity of the research tool (Boparai et al., 2018). In addition, the pilot study also helps to eradicate any flaws in the questionnaire schedule that might be susceptible to misinterpertration, to ascertain that the data gathered could be

utilised for analysis. Consequently, the pilot study enables the researcher to revise and readjust the questionnaire as necessary (Monsen & Van Horn, 2007).

Two middle-school PE teachers took part in the pilot questionnaire. The participants were requested to check the clarity of the questionnaire schedule, instructions and sequencing of questions. In addition the pilot study also served to pinpoint any redundant items, the appropriateness of the type and format of the question as well as to determine how long it took them to complete the questionnaire (Cohen et al., 2018).

Ultimately, some changes to the questionnaire schedule had to be made. Most of the changes implemented concerned the instruction, type and format of the questions. For instance, one question that involved rank ordering did not allow the respondants to rank every sport but rather choose just one. In other cases, respondents were required to answer some questions which did not apply to them, therefore this was adjusted accordingly. Additionally, the participants pointed out that as of recently the LOFs refer to the topic as 'Fitness' which also includes within it SRF components apart from HRF, hence the researcher made sure to refer to the topic as 'Fitness' rather than HRF and to incorporate the SRF components in questions related to the content of the fitness curriculum. Further to this, there were some questions which were irrelevant and didn't yield any important data, hence they were omitted from the final questionnaire schedule. Lastly, one question referred to the PE department which the respondants found to be a bit ambigous since they were uncertain whether the question was referring to the PE department in their schools or policy makers. Therefore, this question was adjusted accordinly to specify that it is referring to policy makers within the PE department.

3.6.1.2 Administering the Questionnaire

The online questionnaire was conducted using Google Forms. The survey link was distributed through social media platforms and directly shared with middle-school PE teachers that the researcher knew personally. A total of 48 questionnaires were completed by local middle-school PE teachers, representing all three institutional

sectors. Once 48 questionnaire responses were gathered, the researcher decided to conclude the survey due to time constraints.

Participants were required to complete a self-administered questionnare without the researcher's presence. This approach offers several advantages as it allows participants to fill out the questionnaire privately, at their own pace, and in a comfortable setting. In addition, they were under no obligation to participate (Cohen et al., 2018). Consequently, this contributes to obtaining more accurate and truthful answers from the respondents.

3.6.2. Semi-structured Interviews

Semi-structured interviews were deemed to be the ideal tool for the qualitative part of the study. This data collection method is a popular tool in qualitative research for good reason. Firstly, semi-structured interviews allow the researcher to explore an individual's subjective experiences and perspective that is difficult to measure through numerical data such as questionnaires (Percy et al., 2015). This is achieved by semi-structured interviews since they comprise of open-ended questions which allow the interviewee to elaborate comprehensively on the topic being discussed (Kelly, 2011). Confirming this view are Chadwick et al. (2008), who point out how this tool aids in establishing a flexible dialogue. In this manner, any relevant issues and concepts that come up in the natural process of the interview may be discussed further through the use of probing by the interviewer (Chadwick et al., 2008). The aforementioned characteristics, help the researcher to obtain an in-depth insight into the participants practices and perceptions on the topic (Kelly, 2011). Therefore, this tool was opted for due to the researcher's curiosity to gain a deeper understanding on how the participants deliver HRF in schools and the underlying reasoning behind such choices.

Moreover, besides offering flexibility, semi-structured interviews also promote a focused dialogue where the interviewees answer more or less similar questions which allows the researcher to compare and contrast the answers from one respondant to another (Cohen et al., 2018).

According to Cohen et al. (2018), it is important for interview questions to align with the research objectives. In light of this, the interview schedule was developed with the aim to go into depth with regards to fitness teaching approaches employed as well as their underlying reasoning and influences behind these approaches. The interview consists of three sections, each addressing different aspects of local fitness provision in middle-schools. The first section focuses on the content delivery of the topic of HRF within the PE curriculum. Section B examines the provision of PE equipment and facilities available in relation to the teaching of fitness components. Meanwhile, section C explores other local practices and policies that may influence the implementation of fitness in PE lesson. Additionally, prior to delving into the main questions, a set of introductory questions were prepared to establish a relaxed atmosphere as suggested by Adams (2015).

3.6.2.1 Piloting the Interviews

A pilot study was conducted prior to administering the interviews with the selected participants. Polit and Beck (2017) postulate that a pilot study is typically used by researchers to ascertain the suitability of their proposed research tools which ultimately helps to accentuate the credibility and validity of the research. Therefore, piloting the interview is essential to help the researcher pinpoint any underlying flaws and subsequently make the necessery revisions to ensure that the interview questions and their sequence aid in eliciting rich and relevant information (Kim, 2010).

The pilot study was conducted with one middle-school PE teacher who was not one of the six participants selected for the study but still fit the selection criteria. The pilot interview lasted for thirty minutes.

Following the pilot interview and after reflecting on the process of the interview as well as the information gathered, there were some evident changes that had to be made. Firstly, the sequence of the questions had to be slightly adjusted in order to have a better flow from one question to the next. Secondly, considering literature on the topic ascertains the importance fitness for life, a question was added regarding the promotion of fitness for life since it wasn't mentioned in the pilot study.

3.6.2.2 Administering the interviews

In accordance with Cohen et al. (2018), a critical aspect of conducting interviews is etablishing a comfortable environment where participants feel free to openly discuss the subject matter. To achieve this objective, participants were given the flexibility to express themselves in their preferred language and choose their preferred meeting place as well as interview time. The interviews took place in quiet cafeterias and were adio-recorded using a fligh mode-enabled iPhone. While most interviews were conducted in English, one participant provided some answers in Maltese.

Interviews are susceptible to a potential flaw wherein participants may present answers they believe to be socially desirable rather than their genuine perspectives and practices on the topic (Eysenck, 2012). To address this concern, the interview protocol was not shared with participants before the interview, ensuring that their responses accurately reflected their fitness instructional practices and underlying perspectives. Additionally, probing was employed during the interviews to elicit candid responses and delve deeper into ambiguous answers, allowing the researcher to explore the interviewees' comments (Adams, 2015).

Furthermore, to foster a comfortbale environment, questions about teaching the topic of finess were omitted or adapted for some PE teachers who stated that they do not cover the subject. This approach aimed to create a conducive atmosphere for open and honest discussion (Cohen et al., 2018).

3.7. Data analysis

Following data collection, the researcher's task involves diligently analysing the provided data to produce pertinent and reliable findings. To acquire comprehensive insights into the instructional practices and influences of PE teachers concerning fitness education, a mixed-method approach was employed.

3.7.1. Quantitative data analysis

Quantitative data was gathered through an online survey conducted via Google Forms. Descriptive statistics served as the primary method of analysis, presenting

demographic information, along with numeric and linear scale question data, through frequencies and percentages.

3.7.2. Qualitative data analysis

The interview data were transcribed verbatim into Microsoft Word and analysed by thematic analysis, chosen for its suitability in accommodating diverse research objectives and analysing a wide range of data for "data-driven" analysis (Braun & Clarke, 2013: p. 4). Thematic analysis is frequently employed in qualitative research to identify and explore relevant themes through coding (Guest et al., 2012). In support of this, it is flexible and it "can be used to identify patterns within and across data in relation to participants' lived experience, views and perspectives, and behaviour and practices" (Clarke & Braun, 2016: p. 297).

The analysis process involved five distinct steps. The first step was the familiarisation process where the data was repeatedly read and reviewed to pinpoint any interesting remarks made by the respondents (Braun & Clarke, 2006). Subsequently, open coding was carried out to identify major concepts, wherein relevant details from the transcripts were highlighted and summarised for significance (Costa et al., 2016).

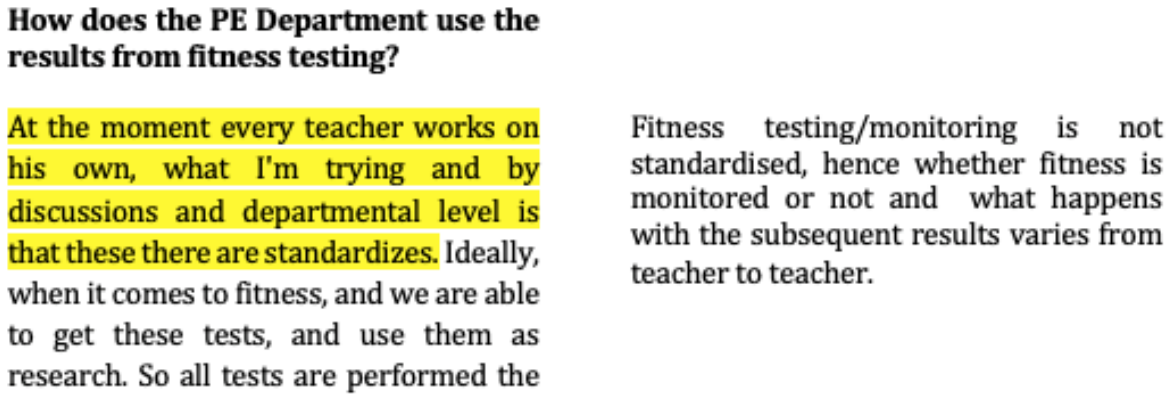


Figure 3. 2: Open Coding

The next step, intermediate coding, involved grouping similar codes together, further refining them to ensure the grouped codes captured similar information (Costa et al., 2016). The final step involved the identification of the three main themes which were:

1. Fitness-related practices
2. Physical Education Teachers' perspective and content knowledge
3. Challenges faced when implementing fitness and its assessment

3.8. Ethical considerations

In addition to ensuring validity and reliability of the study, there are also ethical issues that need to be considered throughout the study in order to safeguard the human participants who took part (Hesse-Biber & Leavy, 2011). Consequently, several steps were taken in order to demonstrate the transparency of the study. Considering that all the participants in the study were adults and were selected using convenience sampling, the ethical procedure for the University Research Ethics Committee (UREC) facilitated by the Faculty Research Ethics Committe (FREC) was relatively straightforward.

3.8.1. Informed consent for the interviews

The researcher meticulously followed the required procedures to ensure that the ethical standards were upheld. To commence the study, the researcher submitted the instrument schedules and the essential forms that were to be handed out to participants for FREC records. Following this, the researcher was authorised to commence data collection for the study.

Firstly, it was imperative to obtain the appropriate consent from potential participants (Creswell & Creswell, 2021). This was achieved through the provision of an information letter prior to the interview which outlined the purpose of the study, the data collection tool utilised, the participants' responsibilities. Further to this, the information letter notified participants regarding the storage of the data and that the semi-structured one-to-one interviews were going to be audio-recorded. Their rights were especially highlighted within the information letter by stating that participation

was completely voluntary and hence, they had the right to withdraw from the study at any time (see Appendix 1).

Subsequently, on the day of the interview, each participant was provided with a consent form (see Appendix 3) which disclosed information regarding the interview process as well as the interviewee's rights that had been previously stated in the information letter.

3.8.2. Maintaining confidentiality and anonymity in the interviews

According to Creswell and Creswell (2021), the participants' privacy should be a main priority, hence it is important that the researcher maintains the confidentiality of participants' identities. In the current study, the researcher concealed the identity of the interview participants through the use of pseudonyms (see Table 3.1)

Participants' Fictitious Names	Sector	Position
James	Church School	PE Teacher
Sarah	Church School	PE Teacher
Manuel	State School	PE Teacher
Benjamin	State School	HoD
Kenneth	Independent School	PE Teacher
Bernard	Independent School	HoD

Table 3. 1: Pseudonyms and information about the participants

3.9. Conclusion

This section outlined the research methods employed to carry out the study successfully. The content of this chapter encompassed the research's framewrok, the process of analysing data, and the ethical factors taken into account. The upcoming chapter will deliver an in-depth exposition of the outcomes of this study, encompassing the central themes that have surfaced as a result of this investigation.

CHAPTER 4 – FINDINGS

4.1. Introduction

The objective of this chapter is to provide a comprehensive analysis of the data collected from 48 questionnaires administered to middle school PE teachers and six interviews conducted with four PE teachers and two PE HoDs. The findings offer valuable insights into the instructional practices, perspectives, attitudes, and ideas of PE teachers and HoDs towards the topic of fitness.

To present the questionnaire results, all the data was gathered by Google Forms, where various charts and responses were generated. Meanwhile, a thematic analysis approach was employed for the six interviews, which resulted in the identification of the following overarching themes:

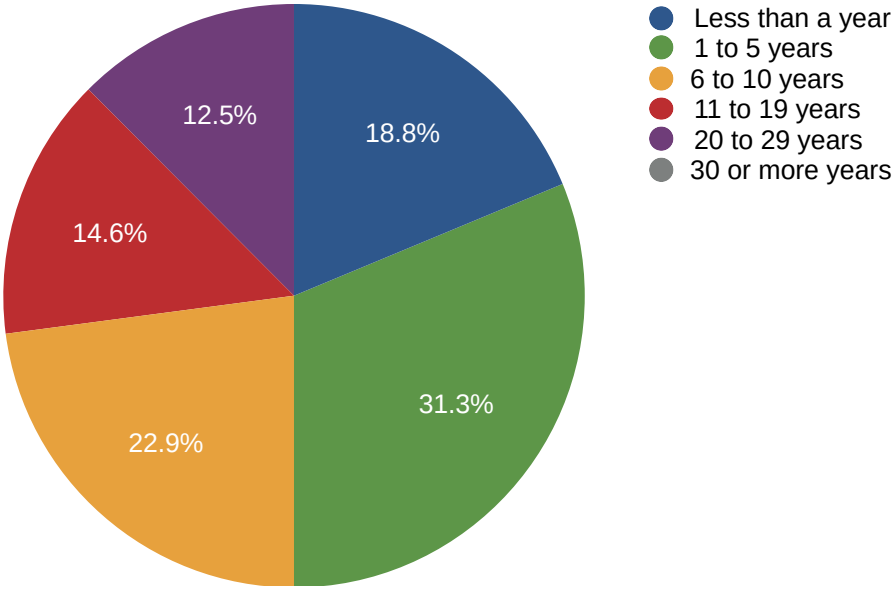
1. Fitness-related Practices
2. Physical Education Teachers' Perspective and Content Knowledge
3. Challenges faced when implementing Fitness and its assessment

The initial part of this chapter will unveil the findings stemming from the comprehensive analysis of the questionnaire responses, shedding light on the quantitative aspects of

the research study. The subsequent section will shift its focus towards the qualitative by elucidating the core themes that emerged through the semi-structured interviews.

4.2. Quantitative data – Questionnaire

The questionnaire analysis presents the key outcomes derived from the questionnaire concerning the topic of Fitness. These findings are organised into five main sections: (1) demographic information, (2) organisation and implementation of fitness



programmes, (3) knowledge base and practical context, (4) support, teacher training, and Fitness knowledge, and (5) attitudes and perspectives. Each section presents descriptive data in the form of text, tables, or figures.

4.3. Demographic information

Out of the 48 questionnaires collected from middle-school PE teachers, 34 were male, and 14 were female. The following pie charts present specific details regarding the respondents' teaching context. Figure 4.1 presents the percentages of teaching experience reported by the participants. Furthermore, Figure 4.2 displays the distribution of respondents across different institutional sectors where they teach PE. Finally, Figure 4.3 indicates the gender of the students that the PE teachers teach.

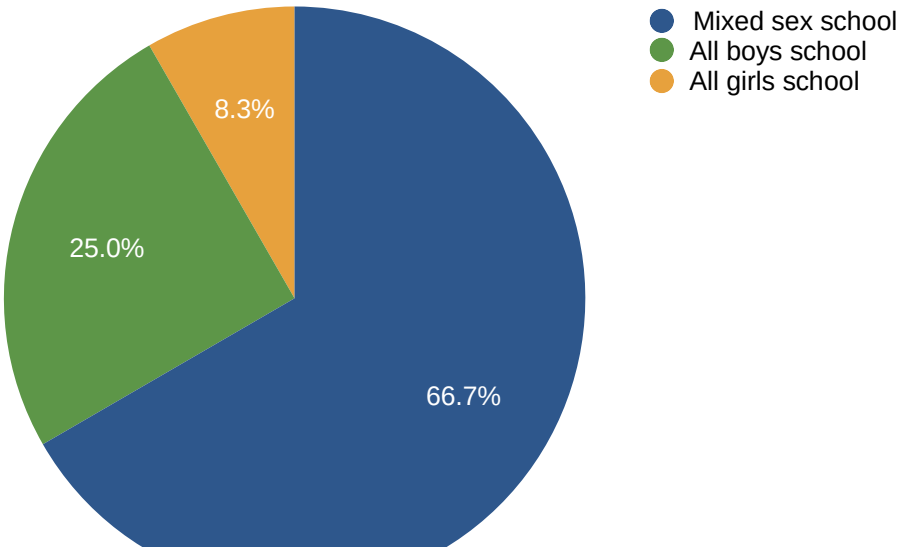


Figure 4. 1: Teaching experience

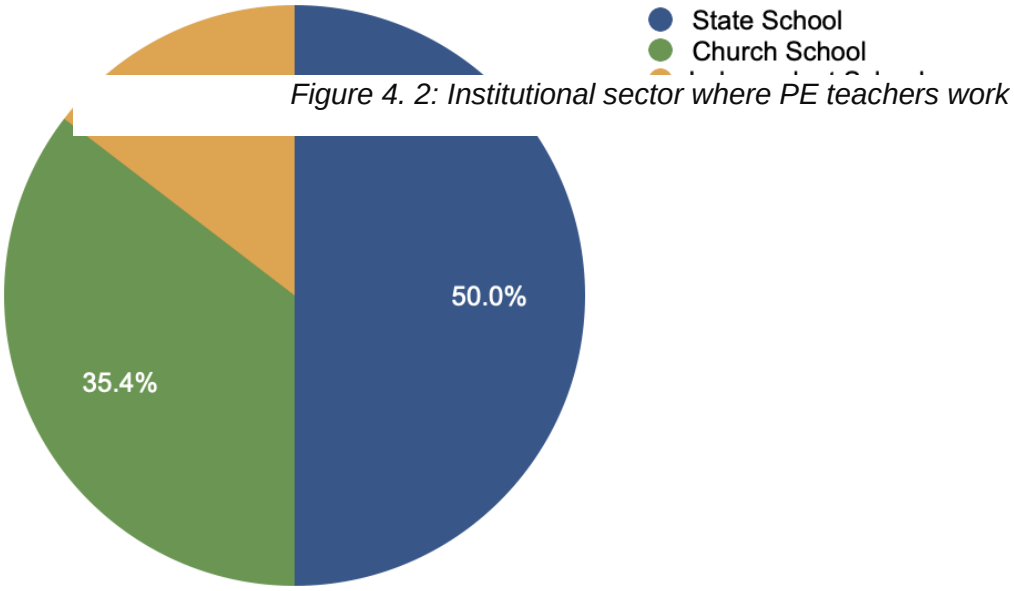


Figure 4. 2: Institutional sector where PE teachers work

Figure 4. 3: Gender that PE teachers teach

4.4. Organisation and implementation of Fitness Programmes

4.4.1. Prominence of Fitness in the PE Curriculum

Middle-school PE teachers were asked to rank the prominence of different activity domains within the PE curriculum. The results show that invasion games were ranked highest by participants, as indicated by 24 PE teachers. Following this, athletics was the highest ranked by 10 PE teachers, while fitness stood as the third prominent domain, chosen by seven PE teachers. When examining the second most prominent area, fitness emerged first, with 12 PE teachers ranking it as the most prominent area. Within the third most addressed subject, the topic of fitness was chosen by seven PE teachers as their third most prominent area within the PE curriculum, while net games and athletics were opted for by 16 and 12 PE teachers respectively. In addition, 10 PE teachers assigned importance as the fourth most dominant area within their PE curriculum, while both the fifth and sixth most prominent area were chosen by five PE teachers. Remarkably, no preferences were expressed for fitness as the seventh and eighth least highlighted domains in the PE curriculum, as evidenced in the findings (see Figure 4.4).

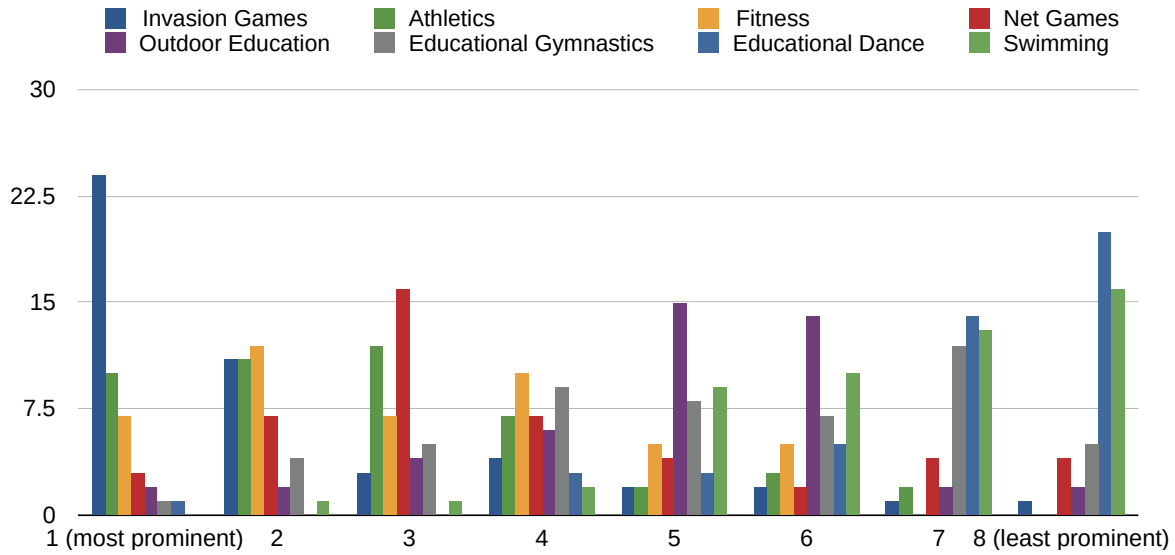


Figure 4. 4: Prominence of games and activities within local PE programmes

4.4.2. Fitness delivery methods

The majority of PE teachers implement the topic through a combination of permeated and focused lessons, accounting for 50% (24) of cases. Furthermore, less than one quarter of PE teachers teach Fitness through other PE activity areas (permeated approach) representing 20.8% (10) of respondents. Additionally, 18.8% (9) of PE teachers, incorporate Fitness in separate blocked units. Meanwhile 10.4% (5) of participants claimed to be teaching it in an unstructured manner. These findings are outlined in Figure 4.5 below.

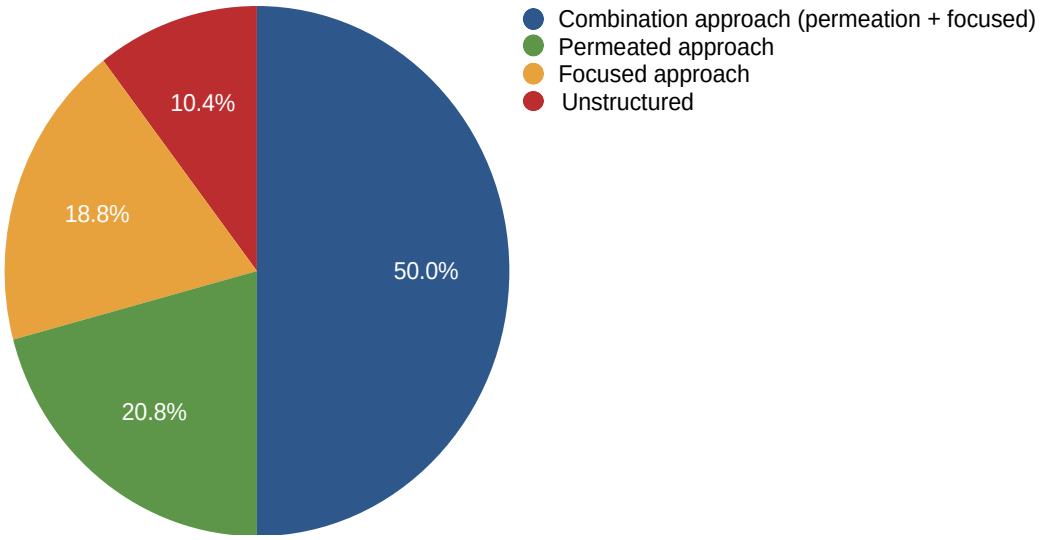


Figure 4. 5: Fitness delivery approaches

4.4.3. Content focus of Fitness units

PE teachers were asked whether their Fitness units were primarily activity-based, theme based, or a combination of both. The results revealed that 50% (19) of PE teachers implement Fitness units that combine both activity-based and theme-based elements. Just under half of PE teachers (44.7%) (17) teach units that primarily emphasise activity-based topics such as aerobics, circuit-training, and skipping. In contrast, only 5.3% (2) offer theme-based Fitness units, focusing on subjects like heart health, muscle health, and designing exercise programs. These findings are graphically depicted in Figure 4.6.

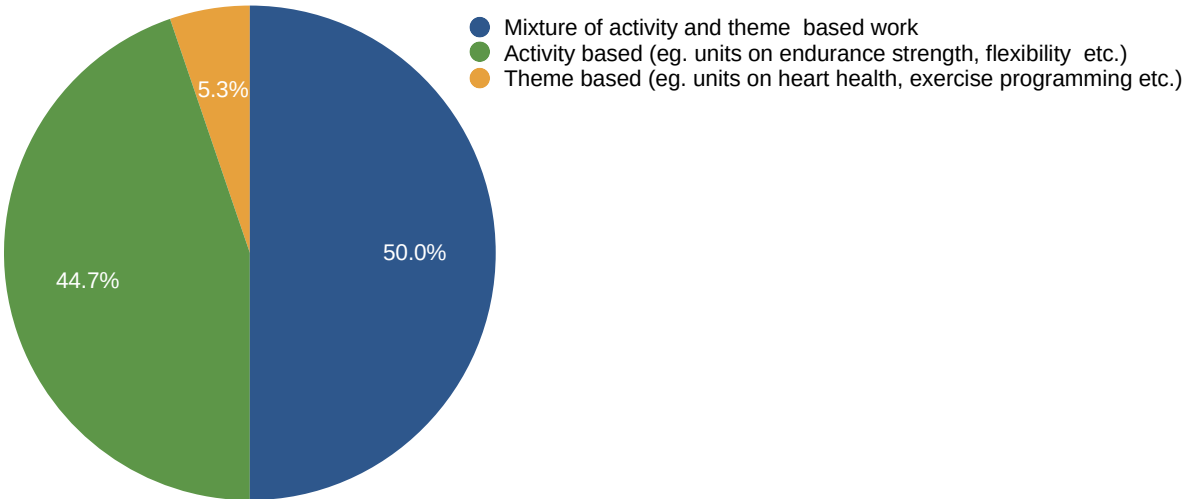


Figure 4. 6: Subject focus of fitness lessons

4.4.4. Delivery of Fitness through the LOF activity areas

Fitness components were found to be incorporated into all seven activity areas defined by the LOFs (see Figure 4.7). A significant proportion of PE teachers (84.6%) (33) reported delivering components of fitness through athletics. Invasion games were also highlighted as a popular activity area for teaching fitness components, as reported by 79.5% (31) of PE teachers. Notably, just under half of the participants (46.2%) (18) reported incorporating fitness components through net games, while 38.5% (15) utilized gymnastics for this purpose. Additionally, a notable proportion of teachers (25.6%) (10) employ outdoor education as a means to deliver fitness, while the least popular activity areas for fitness implementation were educational dance (12.8%) (5) and swimming (10.3%) (4).

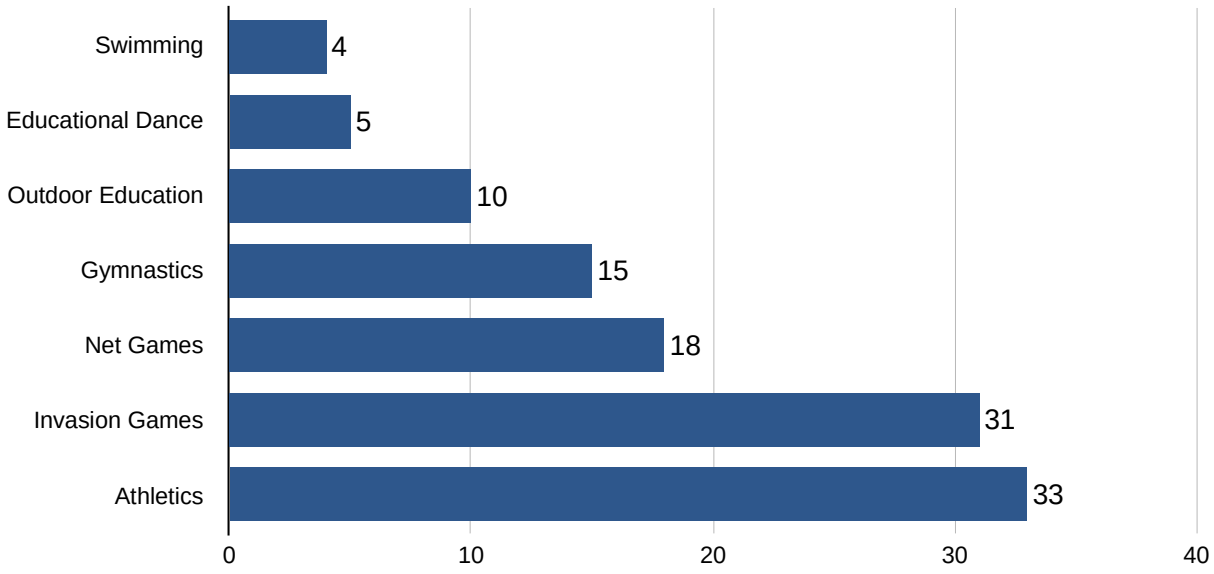


Figure 4. 7: LOF activity areas used to teach fitness through a permeated approach

4.4.5. Practical-theory balance of Fitness units

A significant majority of PE teachers, comprising 62.5% (30) of the sample employ practical fitness lessons, while the other 37.5% (18) include theoretical lessons to teach Fitness (see Figure 4.8).

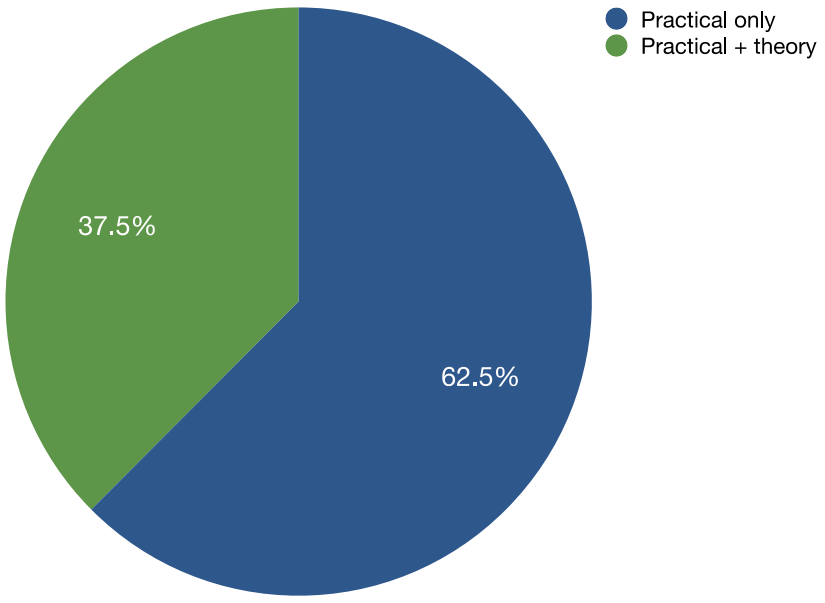


Figure 4. 8: Practical and theory balance of fitness units

The analysis of the data collected from PE teachers regarding their reasons for excluding a theoretical component in teaching fitness revealed distinct categories that shaped their choices. Multiple reasons were mentioned by some teachers, and the most prominent reasonings are as follows:

Reasons	Amount of Respondents
Limited number of PE lessons per week, prioritising physical activities instead	12
Majority of students find theory in PE boring and prefer hands-on activities	6
Theoretical content incorporated briefly through questioning and short explanations between practical activities	6
Teach by doing	6
Students' limited physical activity beyond school hours justifies more active PE lessons	3
Lack of available classroom space for theoretical lessons	3
Fitness concepts naturally emerge in various sports activities	1

Table 4. 1: Reasons why PE teachers refrain from teaching theoretical fitness lessons

Conversley, the study's results demonstrate that PE teachers incorporate theoretical fitness lessons alongside the practical ones for six primary motives. These motives are categorised in Table 4.2.

Reasons	Amount of Respondents
Consolidate learning outcomes (LOs) and enhance understanding	5
Help students understand the importance of HRF	4
It is important to help students understand how the human body works in order to use it properly	2
Help students understand the movement required and apply it to practical lessons	1
Improve technique, prevent injuries, and maximise benefits from fitness lessons	1
Students must be aware that monitoring their own physical fitness is a major responsibility in their daily lives. Fitness also occupies 40% of the total assessment percentage in the Maltese curriculum.	1

Table 4. 2: Reasons why PE teachers choose to incorporate theoretical fitness lessons

4.5. Knowledge base and practical context

4.5.1. Fitness activities

Among PE teachers, a significant portion, comprising 91.7% (44) incorporate running, and 89.6% (43) include circuit training. Rope skipping is integrated by slightly less than two-thirds of PE teachers (see Figure 4.9). Furthermore, over half of the PE teachers teach Obstacle Course Racing (OCR) and free weight training (56.3%) (27). Around a quarter of PE teachers implement fitness activities through sports (27.1%) (13), aerobics (25%) (12), and calisthenics (22.9%). Notably, Pilates, yoga and multigym are infrequently incorporated by PE teachers as is evident in Figure 4.9.

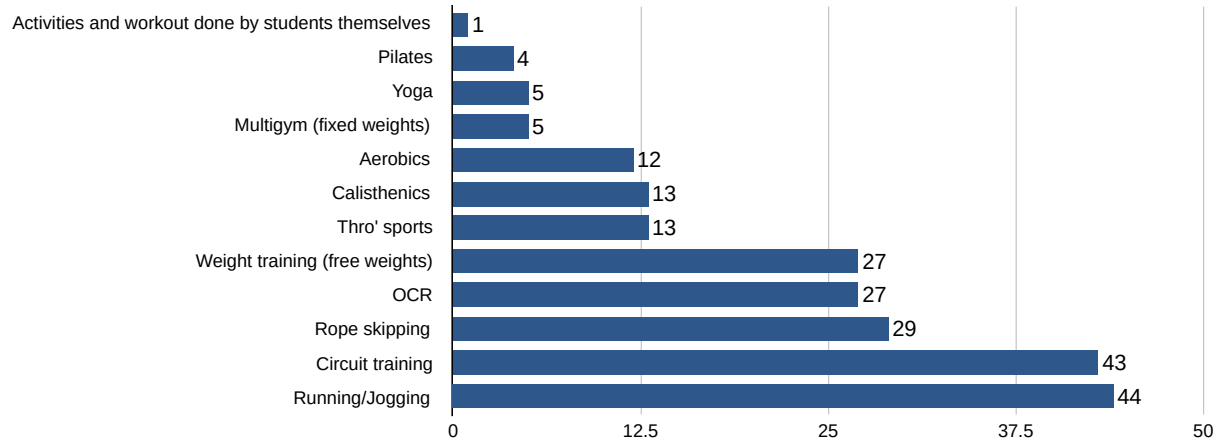


Figure 4. 9: Fitness activities utilised

4.5.2. Fitness knowledge base

The main fitness components tackled by PE teachers are muscular strength and endurance, as well as flexibility (87.5%) (42). Subsequently, a substantial emphasis is placed on cardiorespiratory endurance and speed, both at 83.3% (40), and on agility (81.3%) (39). Additionally, a considerable proportion of PE teachers cover concepts for lifelong participation in PA (60.4%) (29) and fitness testing (58.3%) (28). Just over one third of PE teachers incorporated content related to planning and designing exercise programmes (35.4%) (17), and weight management (33.3%) (16). Social and emotional well-being is incorporated by 29.2% (14) of teachers while topics such as relaxation and stress management and activity level monitoring were included by less than one-fifth of PE teachers (see Figure 4.10).

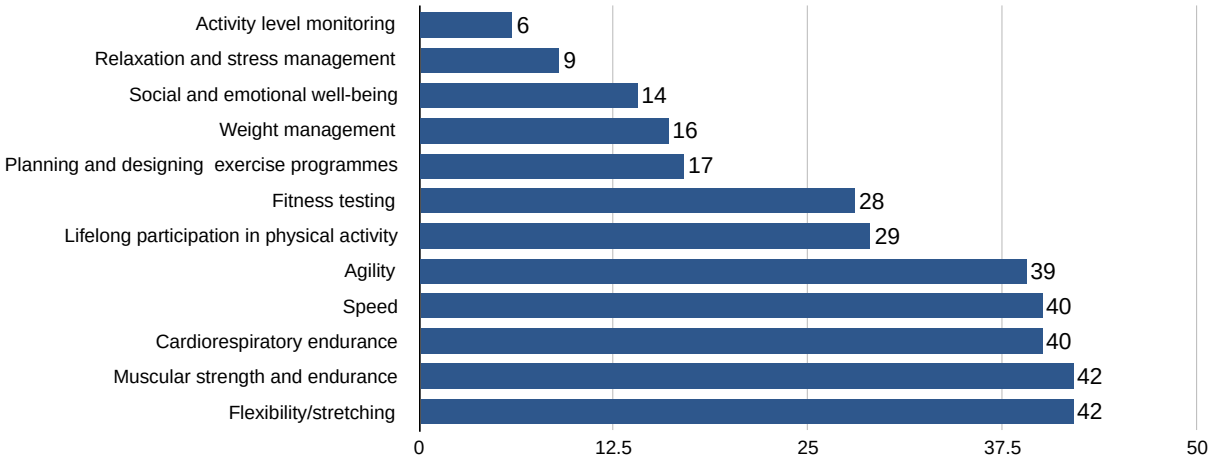


Figure 4. 10: Fitness components tackled by PE teachers

4.5.3. Fitness testing

Fitness testing is incorporated by over a half of middle-school PE teachers (58.3%) (28) as part of the topic of Fitness, while the other 41.7% (20) do not carry out any form of testing.

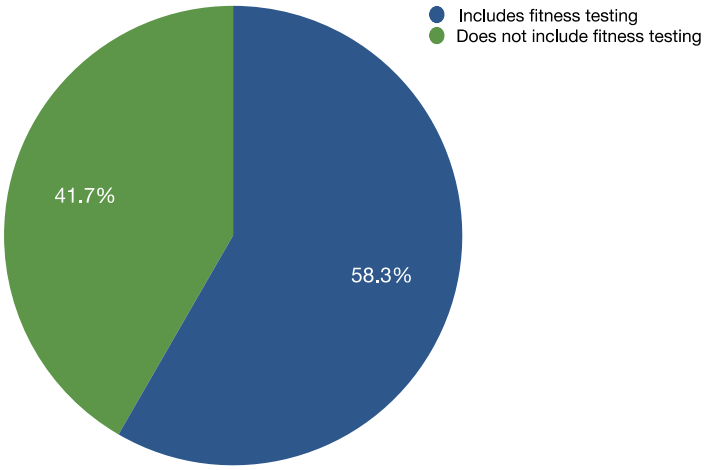


Figure 4. 11: PE teachers' practice of fitness testing

Findings from the questionnaire revealed the popularity of various fitness tests among participants (see Figure 4.12). The most frequently used fitness tests by PE teachers were as follows: the Cooper Test (64.5%) (20), sit ups (58.1%) (18), the plank hold and the sit and reach test at 54.8% (17) each. Individual PE teachers also added fitness tests with a skill-related focus (12.9%) (4) (see Figure 4.12).

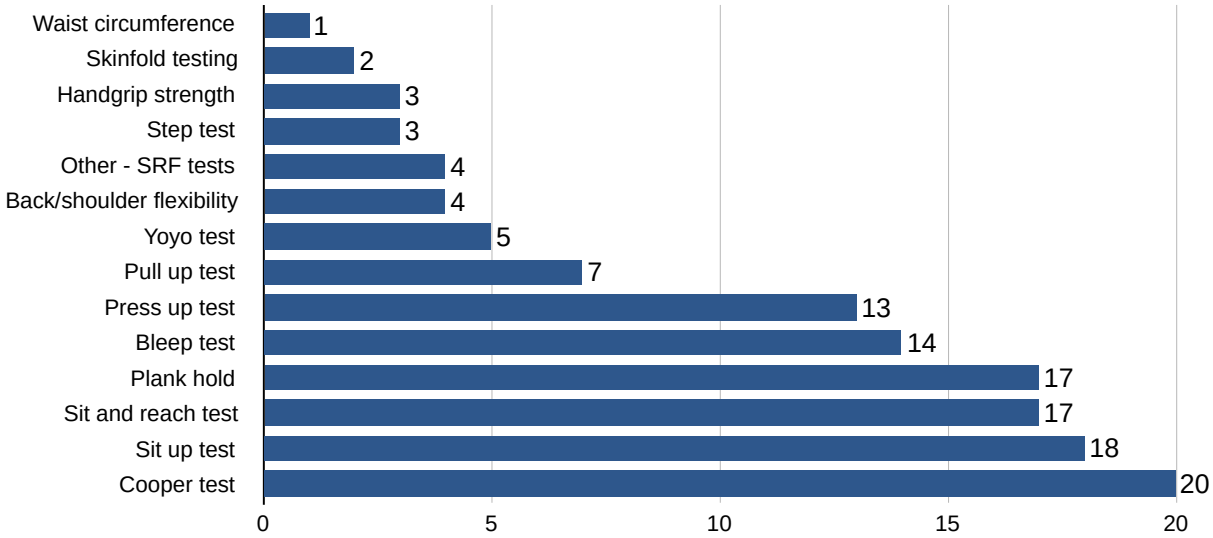


Figure 4. 12: Fitness tests employed by middle-school PE teachers

Teachers were asked about the approach they use to carry out fitness testing within their PE lessons. The findings revealed that the most prevalent method employed by PE teachers, constituting 53.6% (15) of respondents, is a practical examination format, whereby students are assessed by the PE teacher on an individual basis. The second most commonly utilised approach, comprising 25% (7) of all respondents, is peer assessment. In contrast, self-assessment emerged as a less popular method, with only 14.3% (4) of teachers reporting its use. Meanwhile, a small percentage of PE teachers adopted a combined approach, incorporating both teacher-assessed and peer assessment methods into their fitness testing procedures (refer to Figure 4.13). A significant majority of teachers, specifically 74.2% (23) of respondents, indicated

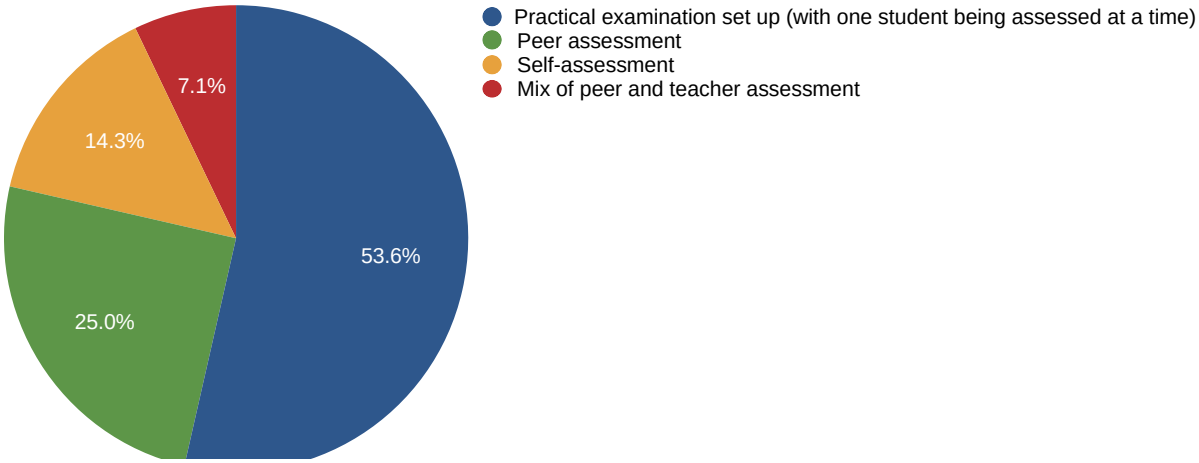


Figure 4. 13: Approach used by PE teachers to carry out fitness assessment

that they administer fitness tests for assessment purposes. Slightly less than two-thirds (61.3%) (19) of participants responded that they employ fitness assessment as a means to monitor students fitness levels and maintain records thereof. Furthermore, an additional 54.8% (17) of PE teachers ticked that they utilise fitness testing to motivate student engagement in fitness activities, and the same percentage of respondents stated that they use it to instruct and reinforce health and fitness concepts. Meanwhile, 32.3% (10) of the respondents stated that their purpose for conducting fitness testing was to identify students who may be at risk of experiencing poor health (see Figure 4.14).

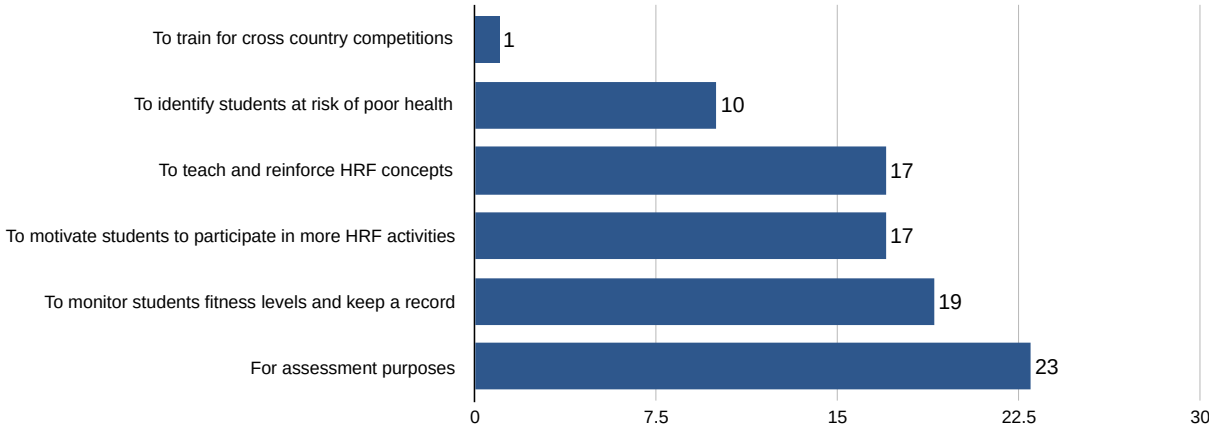


Figure 4. 14: Purpose of fitness assessment according to PE teachers

The PE teachers participating in the questionnaire were asked to provide insights into their students' reaction to fitness testing within the curriculum (see Figure 4.15). Among the PE teachers, 18 indicated that the boys they teach generally respond positively to fitness testing. Further nine PE teachers noted a neutral response from the boys in their classes, while three PE teachers reported a negative response. Meanwhile, 11 PE teachers stated that girls respond positively to fitness testing, while three PE teachers noted a negative response. An additional seven PE teachers reported a neutral response from girls in their classes.

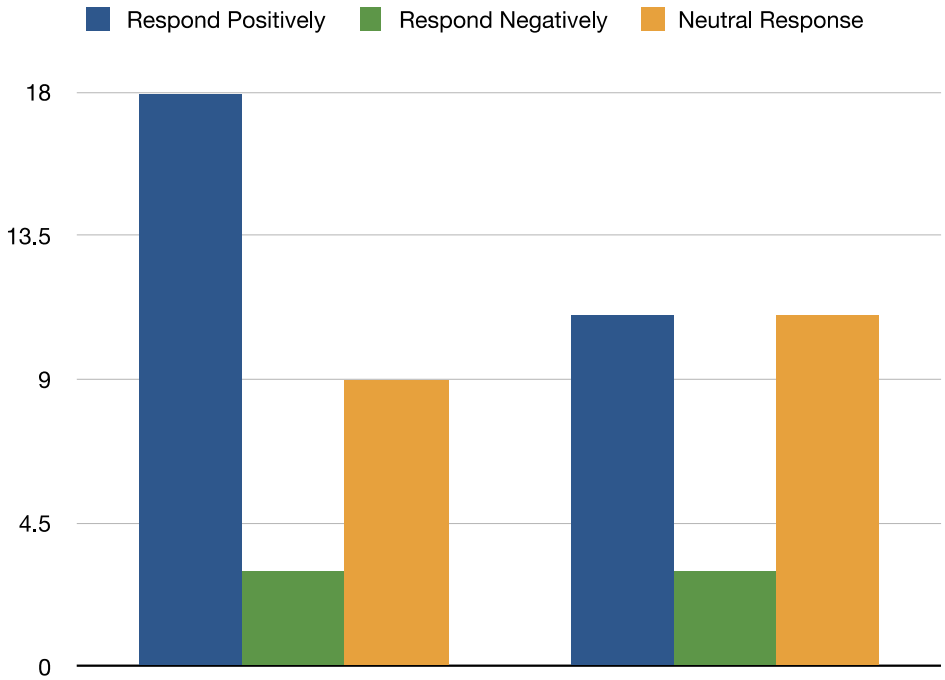


Figure 4. 15: Student response to fitness assessment

4.5.4. Student Fitness levels

The findings regarding PE teachers' evaluations of their students' fitness levels offer valuable insights into perceived physical fitness among their students. In the case of PE teachers teaching boys, the majority (27) indicated that their male students' fitness levels were moderate. Additionally, eight teachers noted their male students' fitness levels as low-moderate, and four teachers reported moderate-high fitness levels among the boys. High fitness levels were reported by just one PE teacher, while two teachers indicated low fitness levels among their male students. In contrast, for teachers teaching girls, a different pattern for girls emerged. The most common response was "moderate" with 14 PE teachers. Another 13 teachers reported that their female students' fitness levels fall in the low-moderate range, and eight teachers perceived low fitness levels among their female students. Only one teacher each reported moderately-high and high fitness levels for their female students, as depicted in Figure 4.16)

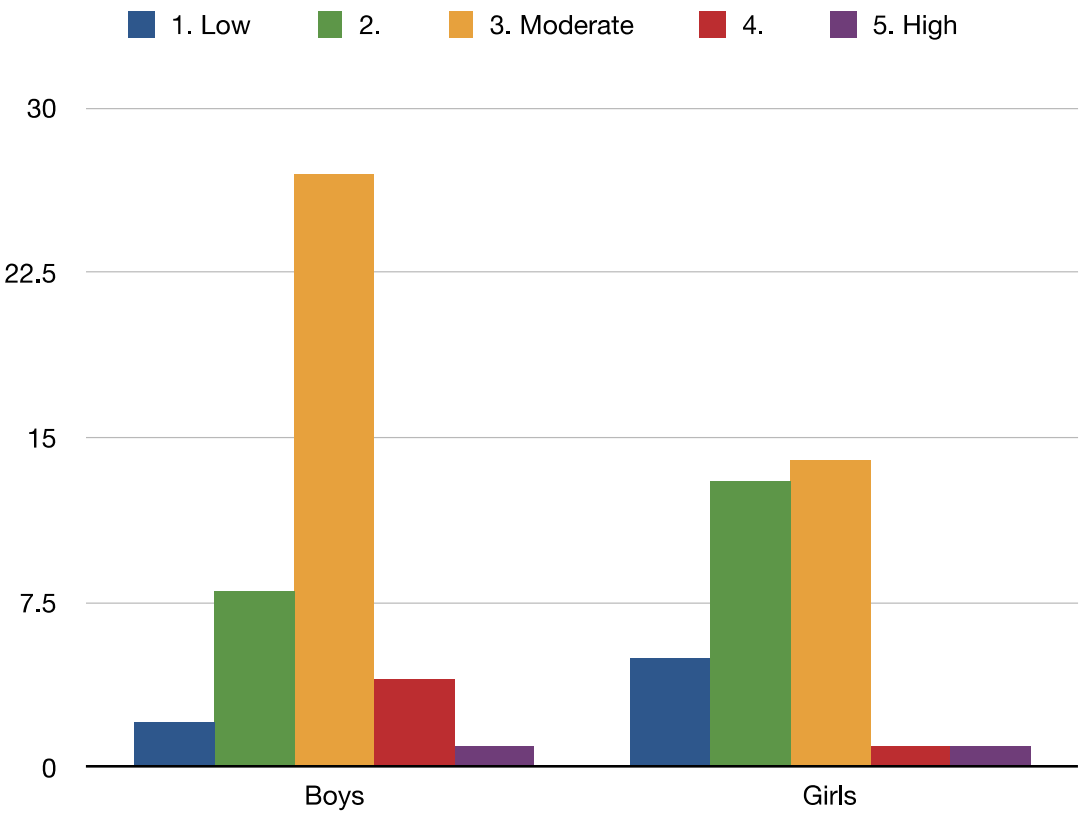


Figure 4. 16: PE teachers' perceptions of the students physical fitness levels

4.6. Support, teacher training and Fitness knowledge

4.6.1. Equipment used to deliver Fitness

The most popular equipment used by PE teachers were: jump ropes (62.5%) (30), medicine balls (58.3%) (28), dumbbells (47.9%) (23), resistance bands (43.8%) (21) and swiss balls (35.4%) (17). Although not as widely adopted, a minority of PE teachers utilize kettlebells (25%) (12) and chin-up bars (20.8%) (10) in their fitness teaching routines. Meanwhile, 22.9% (11) PE teachers reported not using any equipment when teaching Fitness (see Table 4.3). The least popular equipment among participants were gym machines, treadmills, rowing machines, and stationary bikes as illustrated in Table 4.3.

Equipment used	No. of Participants	**Equipment used**	No. of Participants
Jump rope	30	Pull-up bar	10
Medicine balls	28	Barbells	6
Dumbbells	23	Gym machines	2
Resistance bands	21	Stationary bike	2
Swiss balls	17	Rowing machine	2
Kettlebells	12	Treadmill	1
No equipment	12	Other	3

Table 4. 3: Equipment used to teach fitness

4.6.2. Facilities available

Findings of this study shed light on the facilities accessible to PE teachers within their respective school environments. The majority of PE teachers reported having access to playing fields with sports turf, representing 58.3% (28) of the surveyed educators. Additionally, 56.3% (27) of the teachers had access to a gymnasium. Hard play areas surfaced as another common facility, with 50% (24) of the PE teachers having tarmac or cemented spaces for PE classes. On the other hand, the availability of a school hall and athletic areas was comparatively lower, with only 35.4% (17) and 33.3% (16) respectively. Regarding specialised fitness areas, fitness centres are accessible by

only 8.3% (4) PE teachers, while dance studios were available to only 4.2% (2) teachers as can be seen in Figure 4.17.

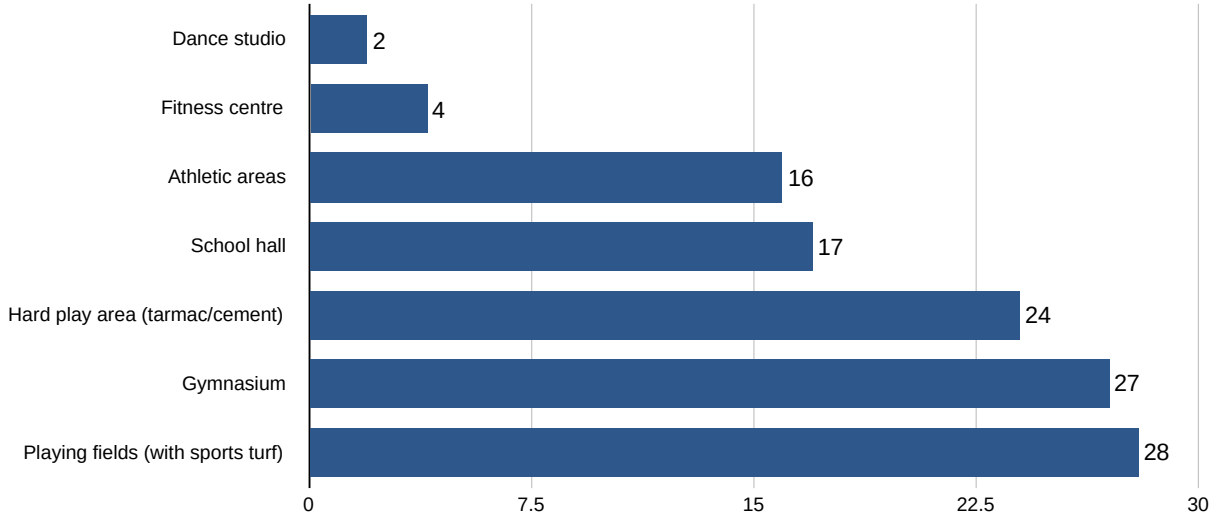


Figure 4. 17: Facilities available

Furthermore, PE teachers were asked to rate the quality of facilities at their respective schools. The results indicated that the largest portion of PE teachers (39.6%) (19) regard the facilities as being in a fair state. Additionally, a quarter (25%) (12) of respondents believe that the facilities at their school are at a good state, while 14.6% (7) consider them to be in an excellent state. Conversely, 20.8% (10) of PE teachers perceive their facilities at their respective schools to be in a poor state (see Figure 4.18).

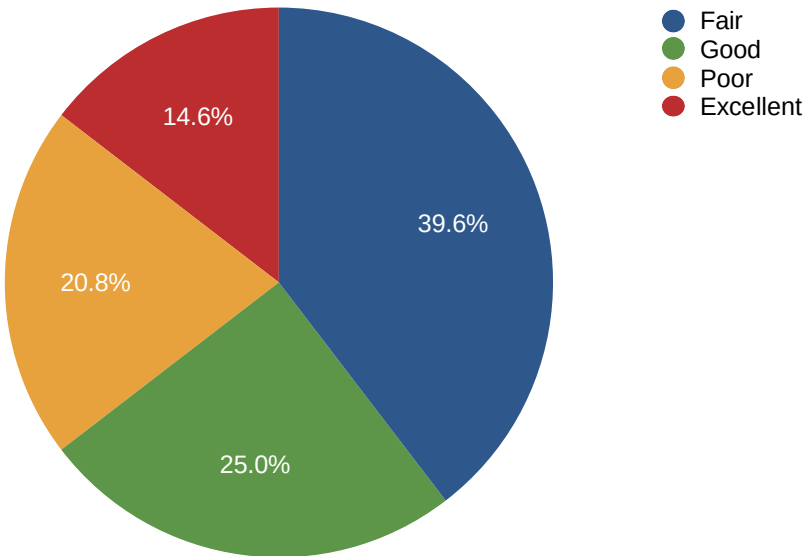


Figure 4. 18: Condition of sport facilities

In continuation from this, the findings highlight that a significant majority of teachers (54.2%) (26) conveyed the viewpoint that their school lacks the necessary equipment and proper facilities to teach fitness. In contrast, 45.8% (22) of participants held the belief that their school has satisfactory resources and facilities for this purpose, as illustrated in the accompanying figure (Figure 4.19).

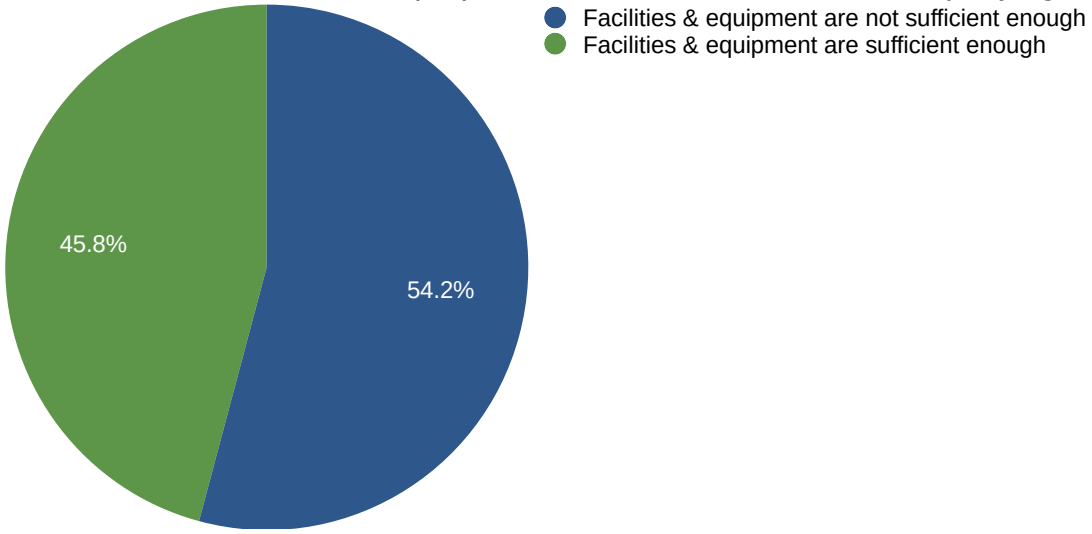


Figure 4. 19: Adequacy of facilities and equipment to teach fitness according to PE teachers

4.6.3. Teacher knowledge on Fitness

About 66.7% (32) of PE teachers indicated that they are “quite knowledgeable” on the topic of fitness, while an additional 20.8% (10) claimed an extentensive understanding of fitness. Approximately 12.5% (6) of respondents expressed having an average level of knowledge on the subject. The distribution of these responses is visualised in Figure 4.20.

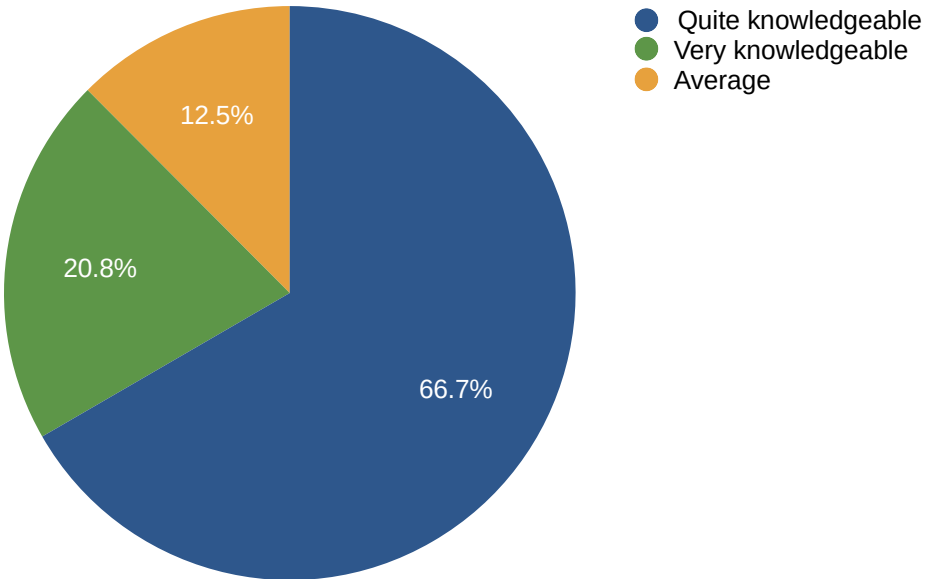


Figure 4. 20: PE teacher self-perceived knowledge on fitness

Among

the participants, a majority of PE teachers (14) expressed a lack of confidence in their ability to teach fitness through sports and another 13 respondents reported that they have average knowledge on the activity area. Similarly, a comparable pattern emerged concerning Pilates, wherein 18 respondents reported that they are “not very knowledgeable”, and 16 PE teachers described their knowledge as “average”. With regards to teaching yoga, a predominant number of PE teachers (17) ascribed themselves as having an average level of knowledge on the topic. Conversely, a predominant number of PE teachers asserted that they are “quite knowledgeable” when it comes to teaching calisthenics (18) and OCR (20). Further findings are depicted graphically in Figure 4.21.

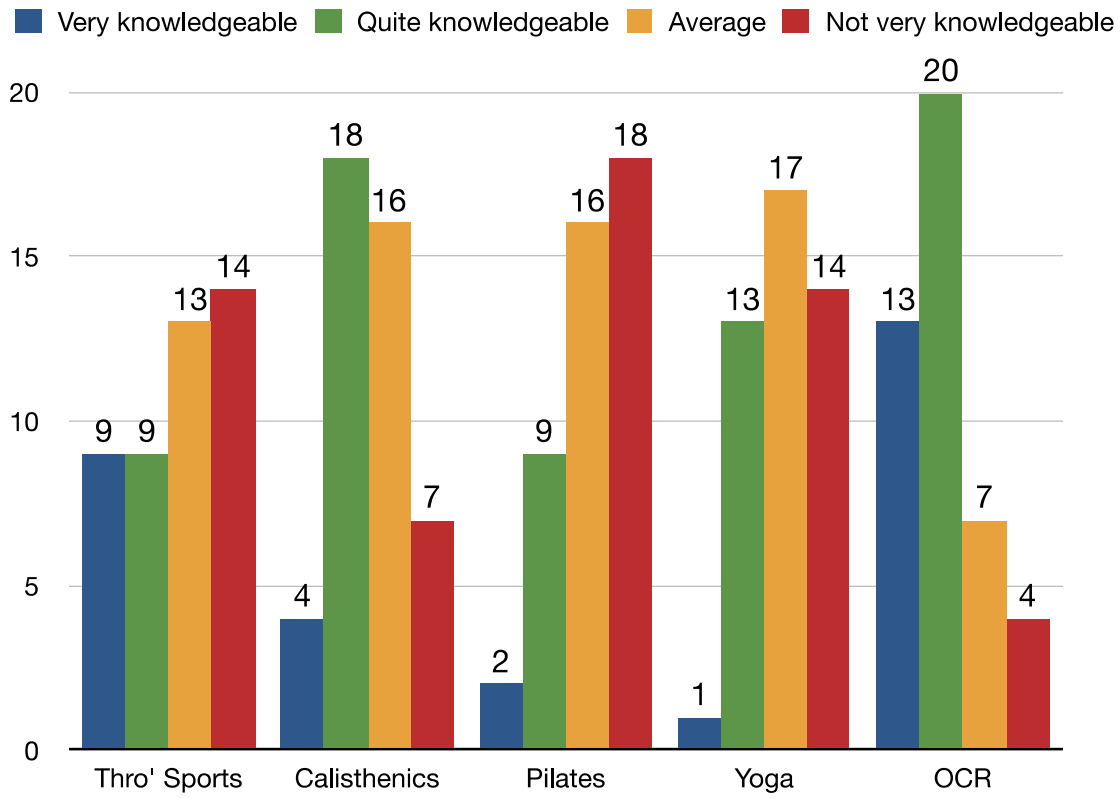


Figure 4. 21: PE teachers' perceived knowleged on activity areas within the topic of fitness

4.6.4. Teacher Continuous Professional Development

Out of the total sample size of 48 PE teachers, a substantial majority of 62.5% (30) reported not attending any CPD courses in the past three years that covered the subject of fitness. Conversely, 37.5% (18) acknowledged their participation in CPD courses focused on fitness during the same period (see Figure 4.22).

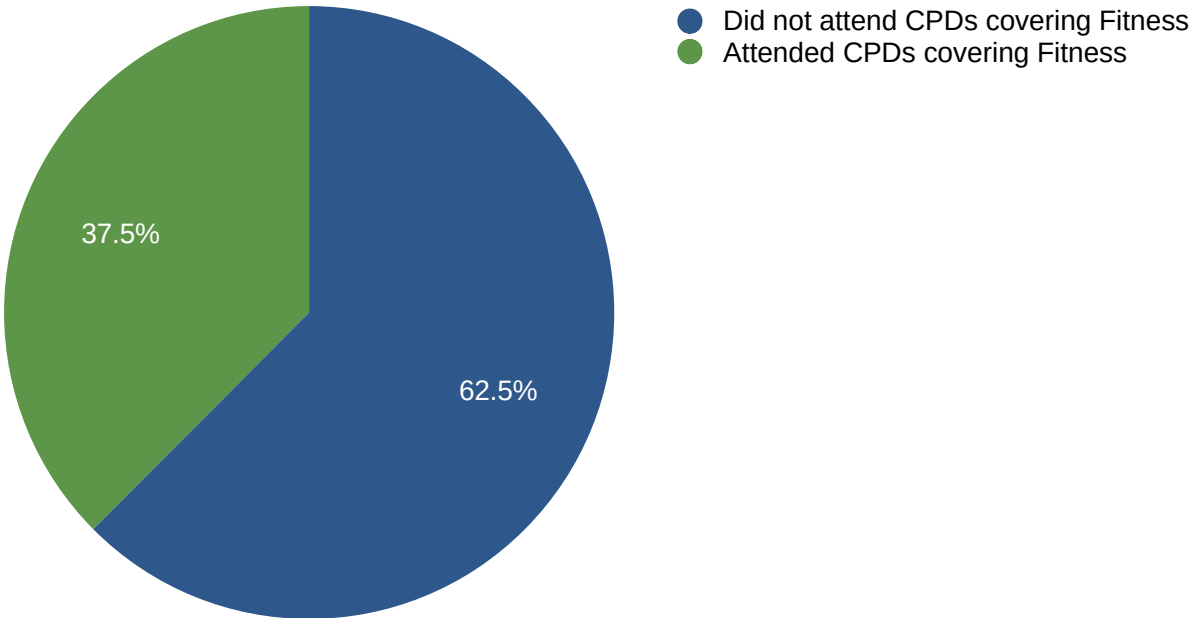


Figure 4. 22: Fitness CPD courses attended by PE teachers in the past three years

4.7. Attitudes and perspectives

4.7.1. Student attitudes towards Fitness lessons

The questionnaires revealed that among the participants, only three PE teachers noted enthusiastic attitudes from their male students towards fitness lessons. On the other hand, a substantial majority (16) reported a passive-normal attitude among male students, as depicted in Figure 4.23. Additional responses indicated that 15 teachers observed normal reactions from boys, five experienced a normal-enthusiastic response, and three teachers identified a passive reaction. Concerning girls, the predominant sentiment (15) conveyed normal reactions, followed by 11 teachers noting passive-normal attitudes. Five teachers reported passivity among female students, while only two PE teachers and another one PE teacher experienced female students who showed normal-enthusiastic and enthusiastic attitudes, respectively (see Figure 4.23).

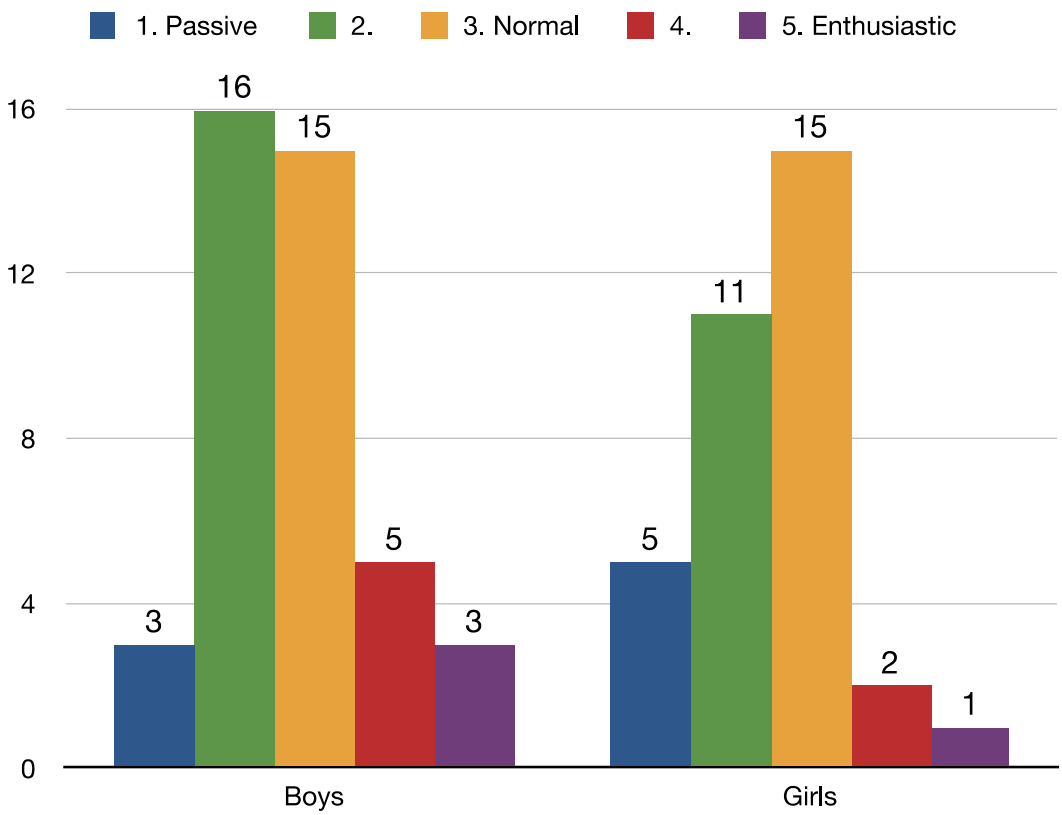


Figure 4. 23: Student attitudes towards fitness lessons

4.7.2. Fitness-related policies

PE teachers were asked regarding their perspective on whether policy makers in the PE policy department have effectively addressed the needs pertaining to the topic of fitness. The findings show that over 56.3% (27) of PE teachers believe that the identified needs have not been adequately met. Conversely, 43.8% (21) of the respondents held the belief that the needs associated with the topic of fitness have been appropriately addressed by policy makers as is evidenced by Figure 4.24).

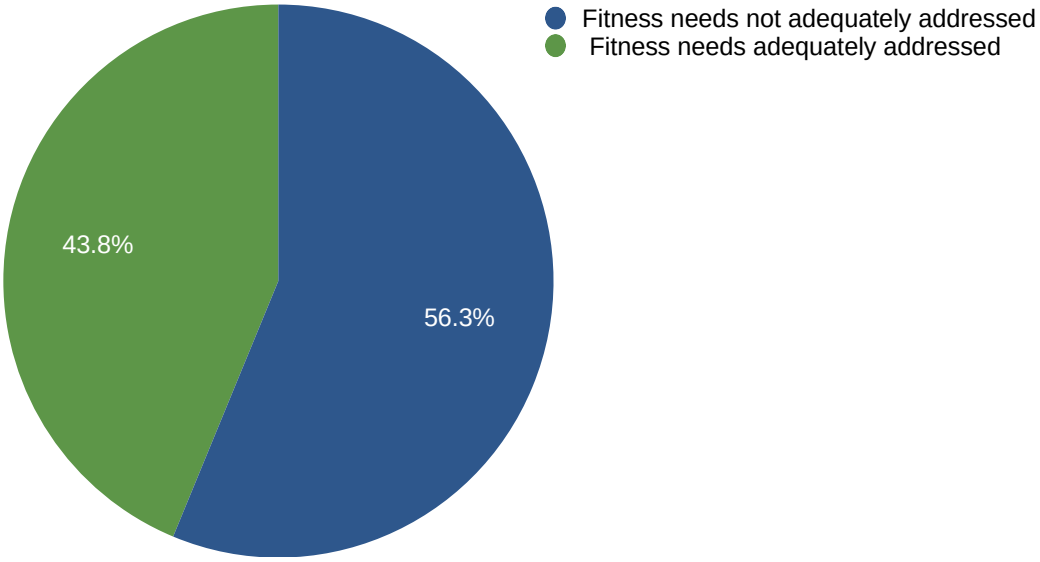


Figure 4. 24: PE teachers' perspective towards the current state of fitness in local middle-schools

Subsequent to the aforementioned question, PE teachers who expressed the viewpoint that existing Fitness practices and policies necessitate improvement were prompted to expound upon the specific domains they believe require intervention from policy makers. The key suggestions made by the teachers can be summarised and grouped as follows:

1. *Need for specialised training:* Eight PE teachers emphasised the importance of professional development courses in relation to fitness as well as hands-on, practical sessions on how to effectively include fitness in the curriculum. One of these teachers highlighted that training should also mention how fitness could be effectively included in the curriculum with limited resources and relatively big classes. Another PE teacher pointed out that specialised training on the topic is a must if fitness is to be given prominence within the curriculum since a PE teacher and a fitness trainer should not be considered as synonymous roles. Meanwhile, another PE teacher highlighted that the initial teacher training did not adequately address fitness. As a result, there exists no standardized approach for the teaching and monitoring of Fitness.
2. *Increase fitness equipment:* Insufficient availability of equipment specifically when it comes to teaching the topic of fitness was identified as a significant issue by six PE teachers. Additionally, a notable concern raised by another PE

teacher was the lack of proper fitness testing equipment to effectively assess and motivate students towards Fitness.

3. *Increase and improve state of facilities:* Six teachers highlighted the inadequacy of existing facilities, with one of these teachers perceiving the current state of fitness facilities as uninspiring and detrimental to students' engagement in fitness activities. In agreement with this another teacher stated that there needs to be more facilities where students could workout in a gym set up and obstacle course racing (OCR).
4. *Increase PE Lessons:* Two PE teachers recommended more PE lessons per week, especially to cater to non-active students.
5. *Sharing of resources:* PE teachers (2) advocated for the sharing of resources and ideas of how to implement the topic of Fitness.
6. *Enhanced support from the Senior Management Team (SMT):* According to one PE teacher more support is needed from the SMT of the schools, along with increased funding to organise Fitness outings and activities outside school premises.
7. *The inclusion of Fitness coaches:* One PE teacher mentioned that there should be an increased presence of coaches in schools to offer Fitness education in various formats.

4.7.3. Fitness changes since the revised LOFs

When asked about the impact of the revised LOFs on their instructional practices, a majority of 79.2% (38) of the teachers in this study indicated that the revisions had not altered their approach to teaching fitness. However, a noteworthy minority of 20.8% (10) reported that the implemented revisions had indeed influenced their instructional practices concerning fitness (see Figure 4.25).

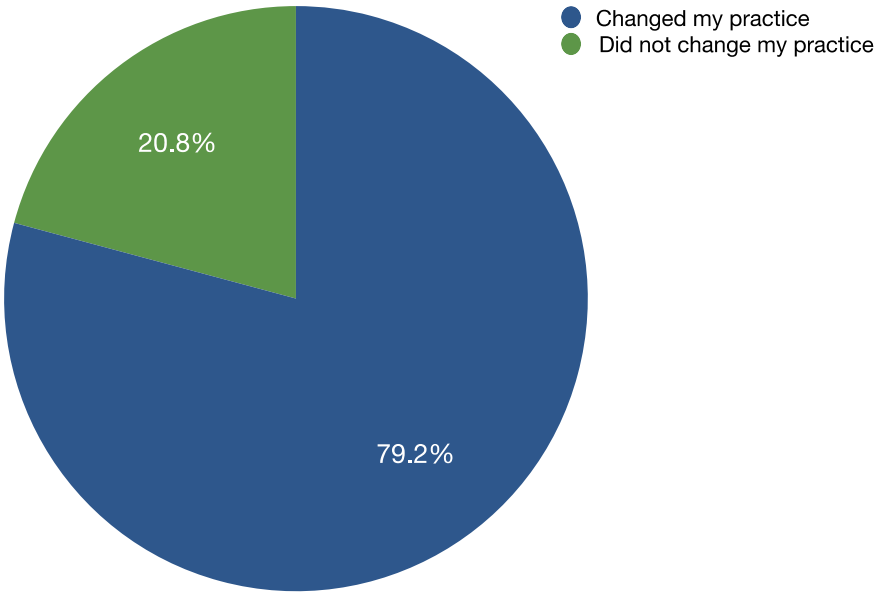


Figure 4. 25: Indication whether the revised LOFs impacted the teachers' approach to fitness

The teachers who adapted their instructional practices due to the revised LOFs mentioned some key changes:

1. *Impact on content focus and assessment:* Three PE teachers stated that the priority given to Fitness has changed their assessment procedures. On a similar note, another PE teacher stated that the new LOFs require Fitness lessons to be more structured and assessed lessons which might not be engaging or enjoyable for the students.
2. *Constrained teaching approach:* Two PE teacher stated that the LOFs limits their teaching approach since they are restricted to introducing only one invasion game per year. According to one of these teachers this is noteworthy since invasion games are highly facvoured by students withn this age group and fitness is very much prominent in such games. Another PE teacher noted a departure from more traditional teachings such as team-sport due to the revised LOFs. However, this teacher remained uncertain about the specific implications for marking students' work.
3. *Explicit learning outcomes:* One PE teacher stated that since the LOFs provided a list of specific outcomes that needed to be addressed, it made it easier for them to understand what topics and concepts to teach during Fitness lessons.

4. *Fitness Delivery:* One PE teacher mentioned how the emphasis on fitness concepts within their lesson has increased, while predominantly continuing to teach it through a permeated approach. The teacher added their intention to integrate the suggested concepts from the LOFs when they have access to the appropriate equipment and facilities to do so.

4.7.4. Views on Fitness as an activity area within the LOFs

When asked about enhancing the teaching of Fitness in local middle schools, PE teachers provided a variety of responses, primarily focusing on various aspects related to institutional improvements, PE programme administration, and the availability of resources. In general, the responses from PE teachers could be grouped into the following categories (see Table 4.4) :

Table 4. 4: PE teachers' recommendations to enhance the provision of fitness instruction in middle-schools

Points	No. of Participants
More fitness-specific equipment invested in schools	11
The provision of fitness testing resources	2
Improving current facilities	8
Indoor gymnasium with specific fitness equipment	2
Integrating fitness within different sports rather than a standalone unit to increase student engagement and motivation	9
Increase weekly PE lessons	8
More CPD courses/practical sessions for PE teachers regarding the implementation of Fitness lessons	6
By having teachers create more awareness about the benefits of physical fitness	3
Focusing on student fitness monitoring	3
Foster creative approaches to assessment	1
Provision of resources such as schemes of work (SOW) and lesson plans	1
Designating fitness as a standalone unit, allowing students to opt for it, along with mandatory activities such as 1-mile runs	1
Quarterly interschool fitness events	1
Use of innovative technologies like Virtual Reality (VR)	1
Use of tablets	1
By embedding it in every unit of work	1

4.8. Qualitative data – Interviews

The purpose of this phase was to delve deeper into the underlying factors contributing to the fitness approach adopted by different PE teachers and schools. The data elucidate practices for fitness and the perspectives and responses of PE teachers and HoDs towards HRF and the topic of Fitness within the LOFs.

The input provided by the participants has been analysed and the specific words and expressions used by individual PE teachers are enclosed in quotation marks. The qualitative data is structured into three primary segments: (1) Fitness-related practices, (2) Physical education teachers' perspective and content knowledge, (3) Challenges faced when implementing fitness and its assessment

4.9. Fitness-related practices

4.9.1. Teaching approaches to Fitness

Two PE teachers indicated that they employ an unstructured integrated approach. When asked about how this is integrated in a permeated approach, Kenneth and James emphasized that fitness often takes a backseat in their PE lessons, as it is not the primary focus. One of the reasons that James chooses not to teach fitness lessons is his belief that PE teachers face limitations in what they can teach. He cites an example, pointing out that when dealing with young students, teachers must exercise caution in introducing weight training due to concerns that excessive weights could potentially hinder the children's growth, thus restricting the range of exercises they can offer. Instead, fitness components are typically addressed indirectly through other areas like athletics and invasion games.

On the other hand, Sarah teaches fitness through a permeated approach in a more structured manner during the warm-up phase where the students kids "work on cardiovascular endurance where they do three laps and after we usually do three typical exercises that target different muscle groups such as squat jumps, push ups and planks", while focused fitness lessons only carried out as a contingency plan for bad weather. Benjamin encourages the teachers he works with to adopt a permeated approach to fitness instruction. Benjamin suggests that rather than isolating fitness as

a separate topic, it should be integrated naturally into other physical activities and sports, such as teaching speed and agility through athletics and football.

Unlike the permeated approach suggested by Benjamin, Bernard proposes a more concentrated and targeted approach to fitness instruction by recommending a focused approach to teaching fitness, which he considers highly convenient due to the large class numbers at his school. Similarly, Manuel mainly teaches fitness components through a separate block unit of work either through circuit training or through sports.

4.9.2. Fitness assessment and monitoring

With regards to fitness assessment, there is a significant division among the PE teachers interviewed regarding both their approaches to assessment and their perceptions of the benefits of assessing fitness. Three PE teachers (Manuel, Kenneth and James) expressed a lack of belief in the value of assessing fitness altogether. Their stances on fitness assessment are exemplified by the following statement made by Kenneth: "*I am not the person who like assessments as a PE teacher. I assess the students because we have to since it's part of the system."*

Kenneth went on to explain that the assessments he conducts are primarily centered on invasion games. Furthermore, James added that assessing fitness could have a negative impact on less athletically inclined students, equating it to a *"death sentence"* for their self-esteem and overall perception in their abilities. He also asserted that conducting an assessment to determine the number of squats a student can perform, for instance, would yield no meaningful benefits. Consequently, he only administers the 12-minute Cooper test, which, in his view, offers a clear indication of a student's athleticism.

Manuel stressed that the most crucial aspect is observing improvement in students from one lesson to another, rather than assigning marks. This perspective arises from his belief that fitness assessment can be highly subjective and, thus, can vary significantly among different teachers. Therefore, Manuel conducts continuous assessments based on the incremental improvements he observes from one lesson to another.

Conversely, two HoDs and the remaining PE teacher believe that fitness assessments have the potential to improve student motivation as well as to help students progress. However, Sarah, despite recognizing the potential advantages, does not conduct fitness assessments in her lessons. Instead, she opts to assess other sports, such as team games. Sarah's reasoning behind this decision is primarily driven by time constraints, perceiving fitness assessments as more time-consuming than assessing sports skills. Bernard sheds light on the practices within the school he works with, stating that all students undergo four basic fitness tests annually. These tests are then recorded, providing teachers with valuable information that can be used to inform their instructional planning and intervention strategies. On the other hand, Benjamin highlights that the schools he works with lack a standardized approach to fitness assessment and record-keeping. Despite the schools' current practices, Benjamin proposes that standardized fitness tests would be more beneficial, particularly for national research purposes.

4.10. PE teachers' perspective and content knowledge on Fitness

4.10.1. Views on Fitness as a component of PE

The analysis of the results yielded mixed perspectives among PE teachers and HoDs regarding the significance of fitness within the PE curriculum. On one hand, Manuel, Bernard and Sarah expressed a belief in the relevance of the topic of fitness, aligning with the fitness for life approach, although this is not always possible to achieve due to other factors that come into play. Indeed, Bernard explains that the topic of fitness is imperative to equip students with the necessary resources to maintain an active lifestyle beyond their school years. Having said that, the teacher harbors doubts about his ability to make the students physically fit through just one weekly lesson.

On the other hand, contrasting opinions were observed among James and Kenneth who held the belief that teaching fitness and its principles are not of significant importance. Instead they believe that the focus of the PE curriculum should primarily

be on invasion games. This is clearly seen in James' contribution provided underneath:

> In my opinion the focus has to be on team sports because fitness there's so many resources on the internet that you can simply go and do an individual fitness session on your own, one of the easiest things to do. While learning a skill in a particular sport like the jump shot in handball which is a complex skill…while the push up you simply go on your hands and go up and down, that's a skill! (sarcastic tone).

Similarly, while Manuel recognizes the value of teaching students about fitness, he maintains that prioritizing invasion games should be the main focus. He expresses frustration with the limitation imposed by the curriculum, which permits only one team game to be taught in a school year. Consequently, if he chooses to teach basketball, he is unable to introduce another sport.

4.10.2. Fitness for Life Approach

The topic of teaching fitness as part of the fitness for life approach arose naturally among some PE teachers and HoDs, while others were directly questioned about this approach. Bernard, the head of the PE department, stressed that stand-alone fitness lessons are insufficient for nurturing students' physical fitness. Instead, the goal of these fitness lessons is to equip students with the necessary tools, including an understanding of correct techniques and the proper use of fitness equipment. He also emphasised the importance of imparting *"lifelong knowledge"* that students could utilise beyond their schooling years. Manuel and Sarah also acknowledged the significance of highlighting specific components of fitness and physiological aspects that students would be addressing, as they believed this knowledge could empower students to apply what they learn to sustain PA throughout their lives.

The teachers added that although the aforementioned would be the ideal scenario, all PE teachers and HoDs tend to incorporate fitness in a discreet manner. They do so by embedding fitness activities within other subjects where students can engage in PA, but without necessarily gaining knowledge about how to maintain physical fitness. Teachers and HoDs mentioned that this approach stems from the fact that students generally lack enthusiasm for fitness and often perceive it as a *"boring"* subject. This aspect is evident in the following excerpts:

> Children enjoy more that kind of stuff. Through the games approach. Once we put the games approach, or a competitive approach in general, without even knowing that they are running or that they are doing agility exercises, because it's fun. (Benjamin)

> We never tell them that they have the cooper test for example or that we're going to do this and not that as the majority would want a ball game. So when you do fitness, you try to do it in a form of a game. (Bernard)

As previously mentioned, Kenneth and James do not address fitness knowledge or concepts when teaching middle-school students, however, Kenneth emphasised his efforts to motivate students towards PA by aiming to serve as a role model for them. Meanwhile, James highlighted that *"when it comes to young kids, you do not have to go into detail of overloading and stuff like that."*

4.10.3. PE teachers' content knowledge on the topic Fitness

When asked about the LOFs of PE with regards to the topic of fitness, half of the participants interviewed showed a level of uncertainty regarding the recommendations put forward by the framework. This is clearly illustrated by Kenneths' contribution: *"I am not aware of the exact fitness related LOFs that are currently being suggested."*

Further to this, Manuel and Sarah stated that they do not feel confident to teach the physical activity areas stipulated by the LOFs such as yoga and Pilates. They both contended that the reason for this challenge lies in the fact that as educators, they have not received specialised training in this area. Additionally, Manuel expressed challenges when it comes to preparing a scheme of work (SOW) specifically focused on fitness.

Moreover, Benjamin raised the concern that in today's educational system, there is a lack of emphasis on teachers being adequately trained to utilize suitable equipment and technology in schools, particularly in the context of PE and fitness. The absence of technology integration is viewed as *"a disservice to the students"* by Benjamin since

he believes that technology can make fitness lessons more engaging and relevant with the current physical activity trends.

4.11. Barriers to implementing Fitness components and its monitoring

4.11.1. Crowded curriculum and time restrictions

Although a specific question about the allocated time for PE was not asked, several interviewees naturally brought up the issue of limited time as a significant barrier to implementing the topic of fitness and its monitoring. Both the PE teachers in church schools and those in independent schools affirmed that their respective schools provide two PE lessons per week for middle-school students.

Manuel, Bernard and Sarah all agree that the amount of time allocated to PE is inadequate to effectively support students in improving their current fitness levels. Bernard emphasised that his school carries out double lessons once a week, which he considers insufficient compared to the three weekly PE sessions offered by state schools. Bernard further stated that given the limited frequency of PE lessons, the primary goal of these fitness sessions is to impart knowledge that can prepare students for long-term fitness, rather than focusing on immediate improvements in their current fitness levels, which are not realistically attainable. Sarah agreed with this perspective, stating:

> What needs to be done is to have more PE lessons. I cannot expect to have a student improve her physical skills or her stamina or strength if she only does the work at school, it is not feasible.

Manuel also pointed out that meeting the criteria set by the LOFs in such a short timeframe is challenging. Meanwhile, Sarah mentioned time constraints within the PE lessons themselves, as student take a while to transition from one lesson to another. Consequently, the teacher rarely has the opportunity to include a cool-down phase.

Moreover, Manuel and Sarah also highlighted that, when faced with time constraints, PE often took precedence as the first subject to be omitted. Manuel emphasised this sentiment by stating, *"... for example this week I lost a lesson because there was the fire drill, we had animal awareness week and funnily enough these things happen mostly during PE lessons."*

4.11.2. Access to facilities and equipment

During the course of the interviews, the subject of facilities and equipment spontaneously emerged in certain instances, in addition to being specifically addressed. Notably, when inquired about the implementation of fitness assessments, Kenneth stated that he presently faces constraints in conducting them due to the lack of necessary facilities in his school. Likewise, Manuel highlighted that his school has eight PE teachers, and most times their PE lessons clash so they have to share the available facilities, leading to unequal distribution of lesson opportunities for students. Consequently, some students benefit from as many as three lessons a week on the football pitch or basketball court, while others are limited to unsafe areas for fitness lessons.

Additionally, Benjamin asserted that if the infrastructure *in schools* is not improved, it is "*very hard to teach the core subjects of PE".* Furthermore, he noted that despite the availability of funding for PE equipment in schools, the responsible PE teachers rarely invest in fitness-specific equipment and modern technology that could facilitate the implementation of fitness within PE lessons such as stop watches and timing-gates to name a few. A concern raised by Manuel regarding the scarcity of fitness equipment such ask kettlebells, making it challenging to accommodate all students due to insufficient quantities.

In contrast, Sarah, Bernard and James had positive things to say about the provision of fitness equipment and facilities in their respective schools. Indeed, James' school has an indoor gym equipped with various machines. However, he indicated that the PE staff, including himself, seldom utilise it, particularly for middle-school students.

This reluctance stems from safety concerns related to the gym equipment, which is a bit old and lacks modern safety features.

4.11.3. Students' attitudes towards Fitness

There is a prevailing preference among the interviewed PE teachers and HoDs for incorporating the topic of fitness into their teaching methods in a subtle manner. A majority of respondents expressed that they prefer to introduce fitness-related activities through games and other engaging approaches, without explicitly labelling them as fitness exercises. The rationale behind this approach is to prevent students from perceiving fitness activities as mundane.

In fact, most participants except for Kenneth agreed that students find fitness lessons boring. The below statements provide evidence to support this:

> Those students that don't do any sports don't have an idea of what fitness is and they would not be looking forward to fitness lessons. (James)

> When you do fitness, they find it as most of the time as boring because it's not a sport. (Manuel)

Manuel added that students often react negatively to fitness lessons, expressing sentiments like "oh, fitness again?". Consequently, in a typical week with three scheduled lessons (assuming none are missed), Manuel promises the students an invasion game following a fitness lesson in an attempt to accommodate the students' preferences.

Moreover, Bernard added that as students progress in age, there appears to be a growing sense of apathy and lethargy towards physical activity. He expressed that over the years as a HoD, he has witnessed a notable decline in students' intrinsic motivation to engage in fitness.

4.12. Conclusion

The outcomes of this research have provided insight into the viewpoints held by PE teachers regarding fitness, along with their instructional methods and the underlying factors influencing their teaching approaches to fitness. In the subsequent chapter, these findings will be thoroughly examined and contrasted both internally and with pertinent literature in the field.

CHAPTER 5 – DISCUSSION

5.1. Introduction

This chapter discusses the primary outcomes of the study, which were gathered via both questionnaires and semi-structured interviews. These findings are closely tied to the literature examined in the second chapter of the study as well as other pertinent empirical research that was considered during the research process. This chapter serves as a platform to present the synthesised insights from the literature and the

data collected through the research methods, shedding light on the study's main discoveries.

5.2. The reality of Fitness implementation in middle-schools

This section centres its attention on an examination of fitness practices and procedures employed within local middle schools, encompassing aspects related to its structure, delivery methods, curricular components as well as assessment.

5.2.1. The organisation and delivery of Fitness

The findings from the questionnaire indicated varied approaches for integrating the subject of fitness into the curriculum. The majority of educators (50%) employ a dual approach, combining focused and integrated methods. There are also a number of teachers who focus solely on one of these approaches, while others only incorporate it in an unstructured manner. A comparable result emerged from the interviews, with PE teachers and HoDs, favouring different delivery methods in their practice.

The foregoing findings, in conjunction with statements provided by interviewees and responses collected from the questionnaire, collectively suggest a notable absence of standardisation, signaling a deficiency in structure and organisation in the incorporation of fitness components within the PE curriculum. Despite the absence of explicit instructional guidelines within the LOFs document, it does prescribe a yearly allocation of six weeks for the teaching of Fitness (MEYR, 2023). Consequently, it can be argued that unstructured and permeated approaches employed by some local PE teachers deviate from these prescribed recommendations. Furthermore, given the considerable variability in how each PE teacher approaches the teaching of fitness, or in some cases, abstains from its inclusion altogether, it may be argued that students are exposed to disparate bodies of knowledge and practice regarding the topic.

In fact, it is noteworthy that some participants within the study opt for an exclusively permeated approach or to entirely exclude fitness activities from their PE programme. Such practices stand in contrast to the extensive guidance provided by international

documents and literature, emphasizing the paramount importance of incorporating fitness education into the curriculum (SHAPE America, 2013; Smith et al., 2014). Furthermore, as illustrated in the literature review, youth are advised to engage primarily in daily aerobic activities, complemented by muscle and bone strengthening exercises incorporated at least three days a week (Janssen and LeBlanc, 2010; Serbes et al., 2017; WHO, 2020). Taking the aforementioned into consideration, Schutte and colleagues (2016) posited that engaging in physical fitness could lead to an increased participation and involvement in PA. In light of this, it could be argued that PE teachers who do not directly address the subject of fitness may be limiting the students' potential in meeting the suggested weekly exercise guidelines.

Meanwhile, the prevalent delivery method adopted by a majority of PE teachers appears to be a combined approach, amalgamating both focused and permeated approaches, which, when implemented effectively, is deemed optimal (Beaumont, 2012). Having said that, there are certain issues associated with adopting one of these two approaches separately or inappropriately, which garnered popularity among some of the participants in this study. For instance, as per the LOFs, focused fitness instruction is typically administered once a year as a unit of work. Following this phase, the topic is not routinely revisited until the subsequent academic year. According to Harris (2009), this approach can pose challenges in maintaining coherence and continuity within the curriculum.

5.2.2. Exploring teachers' implementation of a permeated approach in Fitness education

Within the scope of the present research study, findings from the interviews and questionnaire responses uncovered a noteworthy revelation. Some PE teachers leaned towards a discreet, permeated method for delivering fitness education. In this approach, students are not overtly aware that HRF content is being taught, with the aim of enhancing student engagement. This perspective aligns with recommendations emanating from a substantial portion of survey participants who proposed that integrating fitness components within various sporting activities, rather than as a

standalone unit, could amplify student motivation and involvement. This method of teaching fitness raises concerns about the extent to which students acquire fitness-related knowledge. It is emphasised in literature that health-related fitness knowledge (HRFK) is essential for fostering physically literate individuals who are equipped with the right tools to be able to plan their own fitness regimen. Therefore, contrary to the views of many PE teachers and HoDs, it is emphasised that HRFK has a potential connection to exercise intent and PA (Chen et al., 2018). Research on adolescents underscores a notable absence of essential HRFK, with prevalent misconceptions about fitness, such as equating “skinny” with being fit. This deficiency is identified as a contributing factor to the issue of physical inactivity and the ongoing obesity epidemic among the youth population (Keating et al., 2009).

In line with the abovementioned, it is pertinent to note that a study conducted by Beaumont (2012) unearthed concerns voiced by both PE teachers and students concerning the perceived lack of comprehensive coverage of HRF when employing the permeated approach. This is in accordance with the assertion made by Harris (2009), who highlights that HRF knowledge, comprehension, and skills might become overshadowed amidst other instructional content related to skills and performance. Furthermore, this approach necessitates coordination between teachers and HoDs to ensure uniformity in the dissemination of information among pupils by various instructors (Harris, 2009), a practice that is not consistently observed in local context due to the lack of standardisation (refer to section 5.2.1.).

Moreover, employing suboptimal practices, such as solely incorporating HRF content at the beginning of a lesson, is unlikely to offer a high-quality learning experience for students (Beaumont, 2012). This contrasts Sarah’s teaching approach in the present study, as she conveyed that, although she does not engage in focused fitness instruction, she integrates a permeated approach through activities like jogging and some strength exercises as part of the warm-up routine before each lesson. Such an approach has faced criticism for potentially engendering limited interpretations of HRF (Cale and Harris, 2009a).

Regarding the incorporation of fitness education within the LOF activity areas, it is noteworthy that while fitness was reported to be integrated across all seven activity

areas, a slightly higher proportion was observed within the context of athletics and invasion games. This observation suggests that educators perceive a stronger alignment between HRF and athletic events. This inclination may arise from an interpretation of HRF as a preparatory phase preceding physically demanding athletic activities, which is substantiated by references to ‘warming up’ and the consideration of athletic events as fitness assessments stipulated during both interviews and questionnaire responses.

Furthermore, it is interesting to note that only a limited number of PE teachers choose to teach fitness through educational gymnastics, despite this activity area’s potential to authentically tap the majority of HRF components, as demonstrated in previous research (Trajković et al., 2016). The inclination towards invasion games expressed by the majority of interviewees may stem from the inherent capacity of invasion games to naturally tap the components of speed and agility, which were frequently mentioned as being integrated through a permeated approach within sporting activities, as well as through skill-related assessments, as indicated by the findings of this study. The latter suggests a certain level of conceptual confusion concerning the correlation between skill-related components of fitness, notably speed and agility, and their implications for HRF.

5.2.3. Content covered in Fitness lessons

The majority of PE teachers, as indicated by the responses in the questionnaires, primarily concentrate on aspects like flexibility (42), strength (42), cardiorespiratory endurance (40), speed (40), and agility (39). Upon closer examination of the knowledge supporting fitness programmes during interviews with PE teachers and HoDs, differences emerge in the depth of the content covered. While endurance, strength, speed, and agility were frequently mentioned, teachers and HoDs explained that these components often naturally occur through game situations or running,

suggesting a lack of corresponding theoretical knowledge. This observation is strengthened by the fact that, in this study, James and Kenneth do not conduct any fitness lessons, with James and Sarah emphasizing that children at that age may not need explicit knowledge of certain aspects such as overloading.

Further questionnaire results similarly reveal a notable concern: less than half of the surveyed teachers incorporate the crucial elements of planning and designing exercise programmes into their lessons, which form part of the Learning Objectives (LOs). Besides being an essential part of local LOFs, principles of training and knowledge on how to enhance HRF through regular exercise have been key concepts in CPE programmes (see Chapter 2.8.2). These programmes have proven effective in helping students develop lifelong PA habits (Kulinna et al., 2018; Corbin, 2021). Based on the aforementioned, there appears to be a disparity between recommendations from the literature and the practices observed locally.

In addition to the previously mentioned aspects, certain facets within the fitness unit receive limited attention from PE teachers, with only six PE teachers, among those who participated in the questionnaire reporting the inclusion of activity level monitoring. These outcomes may suggest that students are not acquiring the ability to effectively monitor their own PA levels and fitness. This neglect goes against recommendations emphasizing that these skills play a pivotal role in fostering autonomy, competence, and relatedness, which are key factors that drive motivation (Cale et al., 2012). As pointed out by Harris and Cale (2019), learning to monitor activity levels is fundamental for enhancing students' awareness of their PA levels, thereby making the concept of leading a healthy and active lifestyle more significant and relevant. The authors add that this objective could be accomplished through various means, including self-reported data, heart rate monitoring, as well as the use of pedometers and accelerometers (Harris & Cale, 2019).

Similarly, although lifelong participation in PA and fitness is promoted within the PE curriculum by 29 PE teachers out of 48, this number remains relatively low when compared to the other components of fitness which are being carried out by the majority of participants. The interviews yielded mixed responses on this matter, with three PE teachers and one HoD emphasizing the importance of imparting lifelong

knowledge. Although Sarah, Manuel, Bernard and Kenneth support the fitness for life approach, there are doubts about how effectively this concept is put into practice. This is exemplified the case of Sarah, who only conducts full fitness lessons in inclement weather and Ken who refrains from conducting any fitness lessons, while Manuel encounters difficulties in effectively imparting this knowledge to the students. Additionally, as indicated in the findings section, most teachers tend to incorporate fitness discreetly, which may not adequately equip students with the requisite knowledge and tools to apply what they've learned in their daily lives.

The aforementioned results reflect a diverse range of approaches and levels of importance attributed to lifelong PA within the context of fitness in middle schools. These diverse attitudes underscore the need for improvement in promoting such content, especially considering that several research papers and organisations advocate for the primary objective of PE to be the promotion of lifelong PA (Barney et al., 2015; UNESCO, 2015).

5.2.4. Fitness Testing

Findings from the study showed varying perspectives and practices with regards to fitness testing. Slightly more than half of the surveyed teachers (58.3%) engage in fitness testing within their schools whereas just under half refrain from conducting any form of fitness assessments. The interviews yielded slightly disparate findings, with a higher number of PE teachers abstaining from fitness testing compared to those who incorporate it into their curriculum. These outcomes underscore the absence of a standardised approach, as each teacher seems to make individual choices in this regard.

These local practices, as observed among a significant portion of PE teachers, diverge from current literature on the subject, which emphasises the importance of incorporating appropriate HRF assessment (Cohen et al., 2015; Vazou et al., 2019). Indeed, according to SHAPE America (2012) and Silverman et al. (2008), when teachers provide feedback on test results, students gain a better understanding of their fitness levels, motivating them to engage in regular PA as part of their daily routine.

In terms of the approach employed for fitness testing, a significant majority of PE teacher favored a practical examination format (15) followed by peer assessment (7) and self-assessment (4). These findings contrast from the recommendations put forth by Graser et al. (2011), who asserted that an effective and productive approach to fitness assessments involves moving away from a command-style test administration. Furthermore, as highlighted in the literature review, many experts emphasise the significance of instructing students to self-asses their own fitness levels (Mercier & Silverman, 2014a) which is only carried out by a minority of PE teachers locally.

There are additional concerns associated with the assessment of youth fitness, which pertain to its educational objectives, role, and significance (Alfrey & Gard, 2017). It also raises questions about its effectiveness in enhancing learning and improving health by positively influencing PA behaviours. In the questionnaires, the role of fitness assessment displayed a variety of purposes, with the most common purpose being school assessment, followed by motivating students to engage in HRF activities and reinforcing HRF concepts. The results from the interviews provided slightly different insights. Only Bernard mentioned that the school he works in conducts annual fitness tests, which are documented. In contrast, the rest of the PE teachers refrain from fitness testing, expressing skepticism about the value of assessing fitness, with James stating that evaluating a student's ability to perform squats, for example, would offer minimal benefits. In light of this perspective, one could argue that the effectiveness of fitness testing depends significantly on its implementation. It's noteworthy that out of the 28 PE teachers in the questionnaire who conduct fitness tests, 23 primarily do so for assessment purposes, among other reasons. This suggests that HRF programmes have maintained a focus on fitness and performance, rather than emphasising health-related outcomes through engagement in physical activities. The aforementioned observation is reinforced by James who expressed concerns that for the less athletically inclined students, fitness testing could be detrimental and an embarrassing ordeal.

5.3. Attitudes and Perceptions towards Fitness

This section sheds light on the perspectives of PE HoDs and teachers regarding the topic of fitness, its assessment and the corresponding guidelines put forth in the LOFs. These insights consequently depict the place of fitness within the context of local PE programmes.

5.3.1. Teachers' views on the current Fitness Learning Outcomes

The findings reveal diverse perspectives among teachers when questioned about whether their teaching approach has changed following the updated amendments to the current LOFs. Two PE teachers noted an improvement due to more specific criteria, facilitating an increased focus on fitness components within lessons. Conversely, two PE teachers voiced concerns that the LOFs restrict what they can teachers voiced concerns that the LOFs restrict the range of topics that they can carry out, while another suggested that structured and assessed lessons might loose student engagement. Similarly, nine PE teachers expressed a preference to eliminate fitness as a standalone unit to enhance student engagement. The questionnaire results demonstrate a prevalent inclination against the topic of fitness as it is presented in the existing LOFs. Considering that a significant number of teachers omit the topic of fitness or expressed the wish to omit it from their PE programme due to student engagement might imply that certain PE teachers perceive the topic of fitness as boring for the students. It may be argued that despite the recommendations and learning outcomes outlined within the LOFs document, educators have autonomy in how these objectives are attained during PE lessons, including the assessment of these criteria.

Nevertheless, recent studies align with local middle-school PE teachers' perspectives regarding the topic of fitness. Notably, research conducted by Hirsch et al. (2020), underscore boredom as a significant obstacle in aerobic endurance exercises. Interviews echoed similar results, with James stating that adhering to the recommended duration of teaching fitness as stipulated by the LOFs might lead to student disinterest to an extent where they would "want to kill you".

5.3.2. The Place of Fitness in Local Physical Education Programmes

Additional findings from the study further reinforce PE teachers' perspectives on the value of teaching fitness to students in general. Indeed, the study's results indicate that, among the surveyed participants, invasion games are the central focus for many PE teachers, with 24 respondents prioritizing this aspect over the seven who considered fitness to be the most important element in their PE lessons. This preference towards invasion games mirrors trends observed in international research which indicate their predominant presence within school settings (Harris, 1997; Leeder & Beaumont, 2021).

Furthermore, among the PE HoDs and PE teachers interviewed, only Bernard and Manuel emphasised the important value that the topic of fitness holds within the PE curriculum. Meanwhile, although research findings indicate that Sarah acknowledges the significance of fitness within a comprehensive PE curriculum, her teaching practices suggest otherwise. Fitness seems to lack priority in her teaching approach, as evidenced by her tendency to conduct full fitness sessions solely as a backup plan for bad weather, while prioritizing team-based assessment over fitness assessment. The latter highlight a disparity between her recognized value of fitness and its practical integration within the curriculum. Similarly, James' and Kenneth's main focus is invasion games, with James stating that fitness exercises are readily available online and easily accessible, while team-based activities are useful skills to learn. These assertions made by James reveal a bias within his teaching philosophy and restricted understanding of the value and objectives of HRF, which, in turn, might have an influence on student learning processes. In contrast to the perspective put forth by James, given the low levels of PA among local students (Decelis et al., 2014; Nikitara et al., 2021), it may be argued that merely having readily accessible fitness information online, without addressing motivational factors, might not effectively promote the initiation and sustained practice of healthy movement behaviours. Aligned with this viewpoint, a research study carried out by Kueh et al. (2019) emphasised the crucial role of motivation in maintaining the health of individuals. Consequently, this underscores the relevance of fitness, since, when taught properly, it goes beyond the mere teaching of physical skills. Like Bernard highlighted in the interviews, it also

serves to motivate and provide students with the necessary tools to maintain proper fitness levels and PA throughout their lives (Stodden et al., 2012).

These findings from both phases of the current study imply that invasion games remain the predominant focus for a majority of local PE teachers, possibly indicating a correlation between teachers' preferences and the instructional emphasis directed at students. This seems to be the case in the local context since as discussed in Section 5.2.2., the majority of the interviewees tap fitness components through sports. Similarly, besides athletics, invasion games are the second most popular means that PE teachers deliver fitness through (31 PE teachers). Moreover, a prevalent belief among these teachers and HoDs, derived from the interviews, is that this approach represents the appropriate way to teach fitness. While acknowledging the value of sports in teaching fitness, an excessive emphasis on this topic is deemed to be constraining (Alfrey et al., 2012). In line with this, Ferkel et al. (2019) state that implementing a curriculum primarily centred around team sports could lead to a negative PE experience for students who are less athletic.

5.3.3. Students' attitudes towards Fitness

The results of this research study suggest that a crucial factor influencing the perspective of PE teachers is dependent on the attitudes of their students. This observation emerged prominently during the interviews, where a majority of PE teachers asserted that the most effective approach to engage students in fitness lessons is to teach the fitness components discretely, as students generally perceive the subject as uninteresting otherwise. Similarly, Manuel highlighted the difficulties associated with emphasizing lifelong fitness concepts, which do not align with conventional team-sports, often leading to students expressing dissatisfaction due to perceived monotony. To tackle this issue, Manuel mentioned negotiating with students, offering to include a game in the subsequent lesson following a fitness-focused lesson. These insights align with questionnaire data, as many educators reported that students usually lack enthusiasm with only a minority demonstrating moderate to high levels of enthusiasm (5). These outcomes suggest a potential lack of engagement in the content and approach used to teach fitness concepts to

students. In light of this, an intervention conducted by Akinci and Kirazci et al. (2022) highlighted that in order to promote student engagement three principles have to be in place. These include an element of autonomy, such as utilising heart rate monitors and interpreting HRF fitness test scores, competence, such as practining appropriate exercise mode, intensity, and frequency, and relatedness, such as participating in positive and enjoyable experiences.

However, the local reality appears to deviate from these recommendations that could potentially enhance student engagement. The study's findings reveal that certain aspects capable of integrating the principles of autonomy, relatedness, and competence are significantly underutilised by local PE teachers. For instance, only six out of the 48 participating PE teachers incorporate activity level monitoring, and merely 17 teachers engage in planning and designing exercise programmes (refer to Chapter 4, section 4.5.2.). Hence, it may be argued that the outcomes obtained from the current study contrast empirical evidence on the topic (Akinci & Kirazci, 2022). Consequently, one might denote that the majority of middle-school PE teachers overlook vital components within the fitness curriculum that could potentially elevate student motivation and enthusiasm towards the topic of fitness.

5.4. Supporting the implementation of Health-Related Fitness

This section delves into the support that PE teachers receive regarding the instruction of HRF, encompassing CPD courses available for teachers. Moreover, it scrutinizes the array of resources and support offered to teachers in their instructional practices.

5.4.1. Continuous Professional Development for PE Teachers

Questionnaire results underscore an increased demand for fitness CPD programmes. This was evident from the 62.5% of PE teachers who did not participate in any fitness CPD courses in the past three years. Further to this, when asked about the adequacy of addressing fitness needs by policy makers, eight PE teachers highlighted an increased necessity for specialised training and practical sessions, particularly centred around fitness. In a separate question, six PE teachers advocated for targeted fitness

CPD courses when questioned about strategies for enhancing fitness within educational institutions. These perspectives align with insights from interviewed PE teachers who stressed the need for additional training in teaching fitness, particularly in specialised domains. In fact, Sarah and Manuel expressed discomfort in teaching specific activities, such as yoga and Pilates, as recommended by the LOFs. Meanwhile, Benjamin raised concerns regarding the absence of training for teachers on integrating technology into fitness lessons to render them more authentic and engaging.

The preceding discoveries might be considered as significant indicators suggesting an insufficiency in local support for delivering CPD courses and specialised training when it comes to the topic of fitness. These results align with a recent local study conducted by Cortis (2019) focusing on assessment practices during early secondary school years. Cortis's study implies an oversight in both content and quality within CPD courses.

In contrast to the present local findings, which seem to hint that fitness related CPD courses fall short of expectations, CPD has garnered considerable focus in recent years as a pivotal strategy aimed at enhancing teaching methodologies and students' learning outcomes (OECD, 2014). Moreover, considering that a significant portion of PE teachers did not partake in HRF CPD in three years preceding this research, it can be argued that there have been limited opportunities for their educational perspectives to be challenged through relevant and current information on the topic (Alfrey et al., 2012).

5.4.2. PE Teachers Health-Related Fitness Knowledge

Insights emerging from interviews and questionnaire responses provide indications of PE teachers' understanding and knowledge on the topic of fitness in general as well as the local learning outcomes. The initial analysis of questionnaire data revealed that a considerable majority of PE teachers, comprising 66.7% (32 teachers), indicated that they are quite knowledgeable on the topic of fitness. Having said that, a follow-up question about their expertise in teaching specific activity areas within the topic of

fitness such as Pilates, yoga, and teaching fitness through sports, the majority admitted average or a lack of knowledge.

Moreover, additional excerpts from interviews unveiled certain teachers' perspectives, notably Sarah and James, who dismissed the need for in-depth explanations of concepts like overloading and other training principles, contradicting the expectations outlined in the LOFs. Similarly, Kenneth admitted unawareness of suggestions proposed in the LOFs. Another illustrative case is evident in James' statement, wherein he expressed concerns about strength and weight training for young individuals, citing the potential risk of stunting growth. However, it's important to note that this idea, as articulated by James, is not supported by current research, as several organisations' position statements assert that a well-supervised strength training programme does not inherently pose greater risks than any other youth sport or activity (Faigenbaum et al., 2009; Stricker et al., 2020).

Furthermore, the prevalent understanding among the interviewed teachers that assessment primarily serves as a summative process coupled with the fact that assessment purposes was the most chosen purpose for PE teachers doing assessment reflects the significance attached to the measurement of learning outcomes with the current educational discourse in Malta, as emphasised in Stobart's work from 2008. This perception was consistently coupled with the belief that assessment was primarily enforced as a bureaucratic requirement within schools. These findings imply the necessity for additional training to enhance teachers' comprehension of the diverse approaches available for leveraging assessment to optimize student learning.

While these individual accounts provide valuable insights, they should not be generalised. However, they do contribute to existing concerns about the insufficient emphasis on fitness-specific training and CPD courses, which could potentially impact the quality of fitness education delivered to students. Indeed, teacher content knowledge holds significant importance in fostering effective teaching and facilitating students' learning success (Ward, 2009). Having said that, contradicting fitness practices as well as the fact that some teachers tend to prioritise sports over fitness despite the emphasis placed on fitness within the LOFs may require more than merely

conducting CPD courses. According to the SDT, significant shifts in teaching approaches are more likely to occur when educators genuinely internalize and support the importance and value of the proposed alternative methods (Deci & Ryan, 2000). Previous studies within the broader CPD literature have proposed that the delivery mode of CPD holds comparable, if not greater importance than the specific content it covers (Swennen et al., 2008).

5.4.3. Limited Resourcing

The study findings suggest that the majority of PE teachers tend to avoid teaching theoretical aspects of fitness. However, a small subset of these teachers believe that theoretical lessons play a valuable role in reinforcing fitness learning outcomes, enhancing subject understanding, and fostering an appreciation for fitness. Despite this, the disparity in teacher approaches implies significant diversity in the taught content among PE teachers, indicating a lack of uniformity in utilising fitness-related textbooks or educational materials to support HRF teaching. Additionally, a small number of PE teachers expressed the need for resources like lesson plans and structured schemes of work on the topic.

Given this information, one could argue that existing approaches in this area contradict empirical findings indicating the use of resources like those employed in CPE programmes, may support student learning (see section 2.8.2.) (Kulinna et al., 2018).

5.5. Implementation Influences

This section examines the various determinants that play a pivotal role in shaping and impacting the execution of HRF within the PE programmes carried out locally. These determinants encompass a multifaceted array of factors including student fitness levels, facilities and equipment as well as time available for PE lessons.

5.5.1. Students' Fitness Levels

Moreover, a noteworthy observation reported by several PE teachers pertains to the enthusiasm and performance in fitness lessons. It was noted that the students who exhibit enthusiasm and perform well in these lessons are typically those actively

engaged in extracurricular activities outside of regular school hours. These observations find corroboration in questionnaire results, which suggest that a significant proportion of PE teachers hold the view that students' fitness levels fall below the expected standards.

During interviews, James indicated that only the students already engaged in extracurricular sport activities are physically fit and hence enthusiastic and capable to perform the fitness exercises well, while others, lacking physical fitness, tend to shy away from fitness and fitness assessments. Consequently, without guidance and support within the school environment, these students may maintain a lifelong aversion to physical activity. This observation aligns with the findings of McSharry (2017), who proposed that certain boys and, notably, most girls may lose interest in PE as they come to believe that fitness and health are not relevant to them if they do not excel in traditional sports and games, as suggested by Ferkel et al. (2019).
Sarah, Manuel

5.5.2. Facilities and Equipment

Another noteworthy discovery arising from this study stems from the influential role played by the quality and accessibility of equipment and facilities. This aspect was elucidated through the responses in the questionnaires, where PE teachers were questioned about possible strategies to improve the delivery of fitness in middle-schools. The preeminent suggestion made by PE teachers was the incorporation of fitness-specific equipment and the provision of resources for fitness testing. Likewise, in a separate context, a notable proportion of PE teachers highlighted the deficiency in fitness equipment when identifying areas requiring intervention within the domain of fitness education. The aforementioned factors underscore an inadequacy in equipment for effectively delivering fitness education in local middle-schools.

In a similar vein, PE HoD Benjamin, articulated a deficiency in the integration of technology with equipment and fitness testing, positing that such integration has the potential to enhance student learning and engagement. This perspective aligns with the findings of Bevans et al. (2010), who contend that an adequate supply of exercise

equipment, can augment opportunities for PA during PE lessons. Furthermore, limitations in the amount of equipment availability may lead to an increased allocation of time for logistical management, as exemplified by Manuel in his interview. Given the challenges of accommodating large class sized and the limited availability of equipment, PE teachers may need to modify the lesson type and arrangement. Correspondingly, Bevans et al. (2010) argue that the provision of sufficient resources can diminish the portion of class time dedicated to logistical concerns and, consequently, expand opportunities for children to engage in PA.

Multiple questionnaire items revealed consistent findings regarding school facilities, positioning them as the second most frequently cited area for improvement in fitness lessons, following closely behind the need for better equipment. Correspondingly, Manuel's, Kenneth's, and Benjamin's interview insights agreed with the questionnaire results, with Benjamin emphasising that inadequate school infrastructure significantly impedes effective teaching of the core PE subjects. This collectively suggests that school facilities require improvements. The significance of school facilities in increasing PA levels and student motivation was underscored by Zhang and Solmon (2013) who employed the social ecological model in conjunction with self-determination theory to understand the PA behaviours of students. The study's findings show that a sufficient supply of high-quality equipment and spaces allows PE teachers to diversify PA options during classes, thereby addressing students' need for autonomy. Consequently, students attending such schools tend to exhibit higher levels of self-motivation to participate in physical activities, primarily due to the fulfillment of their psychological needs (Zhang and Solmon, 2013).

5.5.3. Time Restrictions

The findings of this research indicate that a significant portion of educators feel they lack adequate time to properly address the subject of fitness, including its assessment. In fact, a notable recommendation from the survey for enhancing the fitness curriculum was to augment the frequency of PE lessons per week. This issue was also raised during the interviews, where several participants expressed their concerns about the insuffiency of the currently allotted weekly PE lessons to make meaningful

improvements in students' fitness levels. Sarah for instance, emphasised that the existing time allocation is insufficient to conduct comprehensive fitness assessments.

Limited PE time within the local curriculum appears to significantly hinder PE teachers' ability to assist students in attaining their recommended fitness standards and incorporating specific elements that could enhance fitness education, including theoretical fitness lessons and fitness assessments. In line with this argument, Resaland and Kriemler (2011) demonstrated that a minimum of 60 minutes of daily PE is necessary for students to enhance their cardiovascular fitness levels. The allocation of time within the curriculum is a significant concern when ensuring high-quality PE. Consequently, the European Physical Education Association (EUPEA) advises incorporating PE daily until middle-school years which are not met by local middle-schools (Hardman, 2008).

On a similar note, during the interviews, PE teachers expressed concerns regarding the reduction of available time for conducting PE lessons, which is further diminished by other school obligations taking precedence over the scheduled PE lessons. In accordance with these findings, Attard and Vella (2019) also noted in their study that interviewees emphasised the relatively lower priority accorded to PE in comparison to other academic subjects.

5.6. Conclusion

This chapter deliberated upon key findings derived from the study, analysing them in conjunction with prior research on the topic. Fitness instructional practices as well as specific influences and challenges encountered by these educators in implementing the topic of fitness were highlighted. Consequently, these aspects were noted to discern potential strategies and pathways for additional research aimed at improving the quality of fitness instruction while mitigating the challenges associated with its implementation in schools. The subsequent chapter will present conclusive remarks and propose recommendations based on these findings.

CHAPTER 6 – CONCLUSION

6.1. Introduction

This chapter provides a synthesis of the principal findings, elucidating certain recommendation and proposals for subsequent studies. Furthermore, it highlights the identified strengths and limitations that emerged during the course of the research study.

6.2. Key Findings of the Study

In this study, the researcher sought to investigate how HRF was perceived, approached, and taught in middle-schools in Malta. The specific goals included examining and recording the perspectives, methods, and practices related to fitness within the context of the LOFs and identifying potential factors that influenced how this

topic was addressed by PE teachers. The findings depicted a mixed scenario. While some teachers prioritized fitness and expressed a desire for additional professional development and training, it was evident that the teaching of fitness, whether integrated into PE activities or as a separate unit, lacks a cohesive structure. Moreover, fitness assessment was also inconsistent and received limited attention. This gap between policy and practice may be due to various systemic pressures and internal factors that tend to constrain its implementation and effectiveness.

Indeed, the research also delved into the underlying philosophies and challenges that shaped the various approaches to teaching HRF. Interviews and questionnaires revealed a degree of confusion surrounding the concept of fitness, with a wide range of interpretations and implementations within the PE curriculum. Some approaches were relatively unstructured, with fitness education occurring informally during regular activities, while others treated it as a discrete and somewhat isolated unit. While there is some consensus on certain theoretical aspects, agreement was lacking on other topics, and the depth of information presented varied, often leaning towards the basic level.

The abovementioned factors alongside findings on some teachers' understanding of the subject matter and the absence of professional development courses related to fitness underscore the need to provide better support for PE teachers. Enhancing support for teachers is crucial to enable them to effectively convey the significance of fitness and PA to students.

6.3. Implications and Recommendations

In light of the research findings, the study posits recommendations aimed at informing PE policy makers, HoDs and PE teachers who play pivotal roles in the field and have a significant influence during PE lessons. Additionally, these recommendations are extended to encompass senior leadership teams (SLT), and the governing education authorities, as they indirectly impact the formulation and execution of fitness education within educational institutions.

The previously mentioned discoveries derived from the investigation imply several significant considerations concerning the implementation of HRF in educational settings and its representation within HRF literature. These implications encompass teachers' perspectives and comprehension regarding HRF, the positioning of HRF within the LOFs, the initial training of teachers, CPD programmes, the provision of resources and facilities, and the structuring of curricula.

Firstly, PE teachers bear the responsibility for guiding the learning process of fitness as well as its assessment. Evidently, this topic and its monitoring requires additional time and training to achieve a comprehensive understanding, conceptualisation, and effective implementation.

Primarily, there seems to exist a belief that addressing the concepts of fitness within the permeated approach simply involves briefly covering physical fitness components through the inherent nature of the sport or physical activity carried out. This perception, when coupled with the lack of prior fitness-related CPD programmes, underlines a crucial educational requirement for teachers, both during their initial teacher training and in subsequent CPD programmes. It is evident that a more thorough investigation into these procedures is imperative and could serve as the foundation for subsequent research endeavors. Further investigation not only holds the potential to enrich our understanding on the topic but also to equip PE teachers with the requisite knowledge, competencies, and comprehension to establish effective, engaging and beneficial HRF programmes.

Furthermore, if the prevalence of fitness testing and the questionable methods and testing purposes highlighted in this study are representative, and if testing occurs without critical evaluation and in isolation, then it is indicated that the current state of monitoring practice is not optimal and is unlikely to achieve the previously stated objectives. Instead, it might even hinder progress towards these goals. The suggestion is to utilise monitoring as a means to foster learning about health-related matters and enhance the health, activity, and fitness of young individuals. Hence, it is recommended that emphasis should be on the process of monitoring and the associated educational aspects such as understanding, how and why PA and fitness are monitored rather than solely focusing on the outcomes (Cale et al., 2012).

Moreover, addressing various barriers such as insufficient time allocation for PE lessons, lack of proper provision of equipment, facilities and educational resources as well as the perceived undervaluation of the subject, require concentrated efforts and involvement from relevant stakeholders (Hills et al., 2015).

6.4. Strengths of the Study

A noteworthy strength of this study lies in its ability to capture PE teachers' perspective and decision-making on various aspects. This was mainly achieved through the adoption of a mixed-methods approach which played a pivotal role in achieving a more comprehensive understanding of the underlying factors influencing specific instructional practices undertaken by PE teachers when teaching fitness.

Moreover, the utilisation of a mixed-methods approach facilitated the integration of the respective advantages of each method while compensating for their limitations. The initial pilot studies undertaken at the outset of the research offered the researcher an opportunity to refine and modify specific survey and interview questions that lacked clarity for participants or demanded more comprehensive information as perceived by the researcher. Further to this, questions deemed to be futile in adding relevant information to the study were removed. This consequently enabled the researcher to gather valuable perspectives and insights regarding the topic of fitness and how it is being tackled by PE teachers and HoDs.

6.5. Limitations of the study

Despite the study's strengths, there were notable limitations in the current research study primarily associated with the study population. Firstly, this research should not be construed as a comprehensive representation of the entire PE teacher and HoD population in the Maltese Islands, primarily owing to the adoption of convenience sampling and the resultant limited participant pool. While employing a larger and more diverse sample would have enhanced the authenticity and efficacy of the study, time constraints precluded such an approach.

Another limitation pertaining to the present study arose from differing sample sizes obtained from state, church, and independent schools, making it challenging to draw definitive conclusions or establish correlations between datasets (Franke et al., 2012). A recurrent limitation concerning the research tools used concerns the possibility for 'observer' effects. The latter denotes concern that PE teachers might provide socially desirable responses, thereby influencing their behaviours and answers (Eysenck, 2012). Due to these circumstances, it would have been interesting to acquire further empirical support pertaining to the genuine implementation of fitness and its assessment within schools by investigating documented records or through direct observation of PE lessons. As a result, the oversight of this aspect could be regarded as a limitation with the scope of this study.

Furthermore, given the distinctive nature of this study's context, there is an absence of similar research studies conducted in Malta. Although the lack of existing literature posed challenges in conducting this research, the new information gathered about the local setting yields valuable insights into aspects that contribute to the improvement of PE across Malta.

Ultimately, these identified limitations serve as a foundation for recommendations in future research on the topic.

6.6. Suggestions for further Research

During the course of the investigation, the researcher encountered diverse dimensions related to the subject of fitness, and the participants engaged in discussion encompassing various concepts. These deliberations generated a range of ideas for potential future research endeavors. These include:

1. Examining ways in which technology can be effectively employed to augment student engagement in fitness lessons.

2. Exploration of disparities between the expressions of beliefs by PE teachers regarding the topic of fitness and the actual implementation of these beliefs observed in practice.
3. Investigating the impact of teaching fitness as a distinct subject outside of PE, encompassing theoretical components and the utilisation of textbooks.
4. Examining the effects of teacher training and CPD courses on the integration of fitness education in the PE curriculum.

6.7. Final Conclusions

In conclusion, as the primary rationale for PE is to encourage the development of a healthy and active lifestyle among young individuals, it is strongly recommended that the PE profession approaches this objective with utmost dedication. It is anticipated that school PE should serve as a platform for educating children about exercise and engaging young people, as advocated by various authoritative sources. This entails a shift in focus for PE teachers, emphasising the teaching of health-related factors rather than expecting them to naturally emerge as a consequence of engaging in vigorous physical activities. With the explicit inclusion of fitness education in PE, there is a pressing need to concentrate on assisting teachers in the development and supervision of fitness programmes that genuinely foster present and future PA levels through the enhancement of students' understanding, competence, and confidence. Furthermore, this shift in emphasis implies that key stakeholders for HRF education should prioritise participation and competence over performance and training, and the cultivation of informed and self-reliant students rather than students who can simply copy what is showed to them. Such a paradigm shift undeniably necessitates wholehearted commitment from the PE profession, accompanied by appropriate and substantial support.

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APPENDICES

APPENDIX 1

Information Letter – PE Teachers

Dear PE teacher,

My name is Kirsty Aquilina. I am a student at the University of Malta and currently reading for a Masters in Teaching and Learning (MTL) in Physical Education. As part of this course, I will be conducting a research study entitled 'Health-Related Fitness Instructional Practices Among Maltese Physical Educators'. This research study will be carried out under the supervision of Dr. Andrew Decelis.

In my research I aim to explore health-related fitness (HRF) practices in middle schools and identify factors which may influence the approach to and provision of HRF and its monitoring in schools.

I would like to invite you to participate in my research study which will involve taking part in an interview focusing on factors that may influence the approach to and provision of HRF and its testing in your PE lessons. If you agree to participate in my research, I would like to conduct an interview with you at a time and location of your choice. The interview will involve questions about the component of HRF within the curriculum and what influences it's teaching within the PE lesson. It should last about 30 minutes. With your consent I would like to audio-record and take notes during the interview. The recording is to accurately record the information you provide, and will be used for transcription purposes only.

Your identity, will be confidential and anonymised throughout my dissertation with the use of pseudonyms. Any notes taken and audio-recorded data will be securely stored and will be accessed only by myself. Recordings will be used for the purpose of transcriptions; once the dissertation has been sucessfully examined, I will destroy the audio-recording.

Participation in research is completely voluntary. You are free to withdraw from the study at any time without suffering any negative consequences. You can decline to answer any questions. Should you choose to withdraw, your interview data will not be used for the study, and it will be destroyed.

Should you require further information, please do not hesitate to contact me or my supervisor. Thank you for your kind consideration.

Sincerely,
Kirsty Aquilina
Email address: kirsty.aquilina.17@um.edu.mt
Mobile number: 79060398

_____ Researcher's signature

Supervisor's Details: Dr. Andrew Decelis
Email address: andrew.decelis@um.edu.mt

APPENDIX 2

Information Letter – PE Heads of Department (HoDs)

Dear PE HoD,

My name is Kirsty Aquilina. I am a student at the University of Malta and currently reading for a Masters in Teaching and Learning (MTL) in Physical Education. As part of this course, I will be conducting a research study entitled 'Health-Related Fitness Instructional Practices Among Maltese Physical Educators'. This research study will be carried out under the supervision of Dr. Andrew Decelis.

In my research I aim to explore health-related fitness (HRF) practices in middle schools and identify factors which may influence the approach to and provision of HRF and its monitoring in schools.

I would like to invite you to participate in my research study which will involve taking part in an interview focusing on factors that may influence the approach to and provision of HRF and its testing in your PE lessons. If you agree to participate in my research, I would like to conduct an interview with you at a time and location of your choice. The interview will involve questions about the component of HRF within the curriculum and what influences it's teaching within the PE lesson. It should last about 30 minutes. With your consent I would like to audio-record and take notes during the interview. The recording is to accurately record the information you provide, and will be used for transcription purposes only.

Your identity, will be confidential and anonymised throughout my dissertation with the use of pseudonyms. Any notes taken and audio-recorded data will be securely stored and will be accessed only by myself. Recordings will be used for the purpose of transcriptions; once the dissertation has been sucessfully examined, I will destroy the audio-recording.

Participation in research is completely voluntary. You are free to withdraw from the study at any time without suffering any negative consequences. You can decline to

answer any questions. Should you choose to withdraw, your interview data will not be used for the study, and it will be destroyed.

Should you require further information, please do not hesitate to contact me or my supervisor. Thank you for your kind consideration.

Sincerely,
Kirsty Aquilina
Mobile number: 79060398
Email address: kirsty.aquilina.17@um.edu.mt

_____ Researcher's signature

Supervisor's Details: Dr. Andrew Decelis
Email address: andrew.decelis@um.edu.mt

APPENDIX 3

Consent Form – PE Teachers and HoDs

Research Title: Health-Related Fitness Instructional Practices Among Maltese Physical Educators

I declare that I am voluntarily taking part in this project and I understand that I can stop the interview at any time. I have read the Information sheet and that I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

I understand that:

- the interview will be audio-recorded and a transcript will be produced
- the transcript of the interview will be analysed by Kirsty Aquilina as research investigator
- any interview content, or direct quotations from the interview, that are made available through academic publication will be anonymized so that the club and I cannot be identified
- the actual audiorecording will be destroyed after the dissertation has been successfully examined.

On the basis of the information given, I give my consent to participate in an audio recorded interview.

_____ _____

Participant's Signature **Date**

_____ _____

Researcher's Signature **Date**

APPENDIX 4

Questionnaire Guide

Health-Related Fitness Instructional Practices among Maltese Physical Educators

Dear Research Participant,

I am a student currently reading for a Master in Teaching & Learning (MTL) in Physical Education at the Faculty of Education at the University of Malta. As part of my dissertation, I am conducting a study to explore the teaching of health-related fitness (HRF) components in local middle schools.

Therefore, I am kindly inviting you to fill in this questionnaire which will take around 10 to 15 minutes to complete. It is important that the questionnaire is filled in by the person responsible for delivering the PE lessons. All data provided will be treated with full confidentiality and anonymity.

I thank you in advance for your time. Your participation is greatly appreciated.

Best regards,
Kirsty Aquilina

* Indicates required question

Section A: Demographic Information

1. Gender *

Mark only one oval.

- ◯ Male
- ◯ Female
- ◯ Prefer not to say
- ◯ Other: _____

2. For how many years have you taught physical education ? (total number of years altogether, even if non-consecutive). *

Mark only one oval.

- ◯ Less than a year
- ◯ 1 to 5 years
- ◯ 6 to 10 years
- ◯ 11 to 19 years
- ◯ 20 to 29 years
- ◯ 30 or more years

3. What type of school do you teach in? *

Mark only one oval.

- ◯ Church school
- ◯ Independent school
- ◯ State school

4. What gender do you teach? *

Mark only one oval.

- ◯ All boys school
- ◯ All girls school
- ◯ Mixed sex school

Section B: Fitness & the Curriculum

1. Curriculum Content

5. Which games and/or activities are most prominent in your programme? (with 1 being the most prominent area, 2 a less prominent area... with 8 being the least prominent.) *

Mark only one oval per row.

	Athletics	Educational Dance	Educational Gymnastics	Fitness	Swimming	Outdoor Education	Invas Gam
1 (most prominent)	◯	◯	◯	◯	◯	◯	◯
2	◯	◯	◯	◯	◯	◯	◯
3	◯	◯	◯	◯	◯	◯	◯
4	◯	◯	◯	◯	◯	◯	◯
5	◯	◯	◯	◯	◯	◯	◯
6	◯	◯	◯	◯	◯	◯	◯
7	◯	◯	◯	◯	◯	◯	◯
8 (least prominent)	◯	◯	◯	◯	◯	◯	◯

2. Fitness Approach

6. How is Fitness being delivered in your school? *

Mark only one oval.

- ◯ In an unstructured manner
- ◯ Through some or all of the other PE activities (permeated approach - an integrated approach in which HRF is taught through other PE activity areas)
- ◯ In specific blocks of work in the PE curriculum (focused approach)
- ◯ Through a combined approach (a combination of permeation and focused)
- ◯ Other: _____

7. If you deliver Fitness through specific blocks of work, please indicate the current subject focus

Mark only one oval.

- ◯ Activity based (e.g. units on endurance, strength, flexibility etc.)
- ◯ Theme based (e.g. units on heart health, exercise programming etc.)
- ◯ A mixture of activity and theme based work
- ◯ Other: _____

8. If you deliver Fitness in a permeated approach (solely, or in addition to blocks of work), please tick the sports/physical activities through which it is taught (please tick all that apply)

Tick all that apply.

- ☐ Athletics
- ☐ Educational Dance
- ☐ Gymnastics
- ☐ Swimming
- ☐ Invasion Games
- ☐ Net Games
- ☐ Outdoor Education
- ☐ Other: _____

3. Fitness Content

9. Do you use any theoretical lessons within the classroom to deliver Fitness instruction? *

Mark only one oval.

- ◯ Yes
- ◯ No

10. Please specify why you deliver or don't deliver theoretical Fitness lessons. *

11. Which of the following activities do you use to teach Fitness components? (please tick all that apply) *

Tick all that apply.

- [ ] Thro' Sports
- [ ] Calisthenics
- [ ] Obstacle Course Racing
- [ ] Pilates
- [ ] Yoga
- [ ] Circuit Training
- [ ] Rope Skipping
- [ ] Running/Jogging
- [ ] Weight training (free weights)
- [ ] Multigym (fixed weights)
- [ ] Aerobics
- [ ] Other:

12. What topics do you cover when delivering Fitness? (please tick all that apply) *

Tick all that apply.

- [ ] Cardiorespiratory endurance
- [ ] Muscular strength and endurance
- [ ] Flexibility/stretching
- [ ] Speed
- [ ] Agility
- [ ] Weight management
- [ ] Active for life/lifelong participation
- [ ] Planning and designing exercise programmes
- [ ] Fitness testing
- [ ] Activity level monitoring
- [ ] Relaxation and stress management
- [ ] Social and emotional well-being
- [ ] Other: _____

4. Fitness Testing/Monitoring

13. Do you perform any form of fitness testing or monitoring to analyse your student's fitness levels? If you don't, skip to Section C. *

Mark only one oval.

- ◯ Yes
- ◯ No

14. What type of fitness tests do you use? (please tick all that apply)

Tick all that apply.

- [ ] Skinfold testing
- [ ] Waist circumference
- [ ] Back/shoulder flexibility
- [ ] Sit and reach test
- [ ] Pull up test
- [ ] Handgrip strength
- [ ] Plank hold
- [ ] Sit up test
- [ ] Press up test
- [ ] Yoyo test
- [ ] Step test
- [ ] Bleep test
- [ ] Cooper test
- [ ] Other: _____

15. What approach do you use to carry out fitness testing ?

Mark only one oval.

- ◯ Practical examination set up (with one individual being assessed at a time by the teacher)
- ◯ Peer assessment
- ◯ Self-assessment
- ◯ Other: _____

16. What is the purpose of the fitness tests that you employ? (Please tick all that apply)

Tick all that apply.

- [ ] For assessment purposes
- [ ] To motivate students to participate in more health-related fitness activities
- [ ] To identify students at risk for poor health
- [ ] To teach and reinforce health-related fitness concepts
- [ ] To monitor students fitness levels and keep a record
- [ ] Other: _____

17. Generally, how do your students respond to fitness testing within the curriculum? Respond according to the gender you teach, if mixed respond for both.

Mark only one oval per row.

	Respond Positively	Respond Negatively	Neutral Response
Boys	◯	◯	◯
Girls	◯	◯	◯

Section C: Equipment and Sports Facilities

18. What equipment or tool if any do you use to deliver Fitness (please tick all that apply) *

Tick all that apply.

- [ ] Medicine balls
- [ ] Swiss balls
- [ ] Resistance bands
- [ ] Stationary bike
- [ ] Rowing machine
- [ ] Treadmill
- [ ] Jump rope
- [ ] Dumbbells
- [ ] Barbells
- [ ] Kettlebells
- [ ] Gym machines
- [ ] Pull-up/chin-up bar
- [ ] I don't use any equipment
- [ ] Other: _____

19. What facilities are available for use in your school? (please tick all that apply) *

Tick all that apply.

- [ ] School hall
- [ ] Fitness centre
- [ ] Gymnasium
- [ ] Athletics areas
- [ ] Playing fields (with sports turf)
- [ ] Dance studio
- [ ] Hard play area (tarmac/cement)
- [ ] Other: _____

20. How would you rate your schools' facilities? *

Mark only one oval.

- ◯ Excellent
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

21. In your opinion, does your school have the appropriate facilities and equipment * to deliver fitness lessons?

Mark only one oval.

- ◯ Yes
- ◯ No

Section D: Teacher's Training and Student Motivation

22. In your opinion, on a scale of 1-5 with 1 being the lowest and 5 highest, how would you rate the fitness level of students in local secondary schools? Respond according to the gender you teach, if mixed respond for both.

Mark only one oval per row.

	1. Low	2.	3. Moderate	4.	5. High
Boys	◯	◯	◯	◯	◯
Girls	◯	◯	◯	◯	◯

23. On a scale of 1-5, how do you perceive the students' attitudes in your school towards lessons targeting Fitness? Respond according to the gender you teach, if mixed respond for both.

Mark only one oval per row.

	1. Passive	2.	3. Normal	4.	5. Enthusiastic
Boys	◯	◯	◯	◯	◯
Girls	◯	◯	◯	◯	◯

24. How would you rate yourself when it comes to your knowledge regarding Fitness? *

Mark only one oval.

- ◯ Very knowledgeable
- ◯ Quite knowledgeable
- ◯ Average
- ◯ Not very knowledgeable
- ◯ Not an area of interest

25. How would you rate your knowledge on these 5 Components? *

Mark only one oval per row.

	Very knowledgeable	Quite knowledgeable	Average	Not very knowledgeable
Thro' Sports	◯	◯	◯	◯
Calisthenics	◯	◯	◯	◯
Pilates	◯	◯	◯	◯
Yoga	◯	◯	◯	◯
Obstacle Course Racing	◯	◯	◯	◯

26. Have you attended any Continuing Professional Development courses that covered or included fitness in the last 3 years? *

Mark only one oval.

◯ Yes
◯ No

27. Do you think that policy makers within the PE department have adequately addressed the needs in relation to fitness ? *

Mark only one oval.

◯ Yes
◯ No

28. If provision is inadequate, please specify any needs you consider the PE department to have.

Section E: The learning Outcomes Framework for Physical Education

29. Have the revisions made in the LOFs in 2022 changed your practice in any way? *

Mark only one oval.

- Yes
- No

30. If yes, briefly describe these changes.

31. In your opinion how can the teaching of Fitness be improved in local middle schools? *

Thank you for your time.

APPENDIX 5

Interview Guide – PE Teachers

Ice Breakers

- How long have you been working as a PE teacher ?
- Which year groups have you taught ?
- Did you change schools in your teaching career? Did you see a difference between school to school when it comes to the delivery of PE ?

Section A: Fitness Teaching Approach and Influences

1. Could you please describe a typical fitness lesson that you utilise?
   Probe – What aspects do you include? Do you any theoretical aspects such as fitness programming?
2. Are there any fitness components that you prioritise more than others?
   Probe – What are the influences that affected this decision?
3. How is fitness being delivered within the PE curriculum? Is there a standardised practice that all teachers have to follow or does it vary from teacher to teacher?
   Probe – What about fitness testing?
   Prompt – Is there a reason why/why not?
4. Do you deliver content within your lessons for a fitness for life approach?
   Probe – Do you encourage any fitness activities after school?
5. Do you carry out any type of fitness assessments?
   Probe – If yes, how are you or the PE department using the results of the fitness tests?
   Probe – If yes, what type of assessment do you carry out?
   Probe – If no, is there a reason as to why you don't carry out any form of assessment?
6. Do you believe the fitness test is effective or not effective to measure students' fitness levels?
   Prompt – Why/why not?

Section B: Equipment/PE Facilities

7. Do you think that your school has sufficient facilities to teach the topic of fitness within the PE curriculum?
   Probe – Do you have the facilities required to teach the physical activities recommended by the LOFs when it comes to fitness such as OCR?

8. Do you believe that the school is appropriately equipped with fitness equipment to deliver PE lessons as well as for monitoring fitness?
   Probe – Do you have any stationary bikes etc?
   Prompt – Why/ why not?

Section C: Other Influences to the Provision of Fitness Teaching

9. In your opinion, did the Initial Teacher Training course you pursued prepared you enough to teach the topic of fitness?
   Prompt – Why/why not?

10. How is the students' approach when it comes to fitness?
    Probe – Does their perspective on the topic of fitness effect the way you approach the topic?

11. Are there any other barriers that you believe are faced with when it comes to implementing the fitness syllabus?

12. Do you believe that the provision of fitness in schools is where it needs to be at the moment or do you believe that changes need to be made?
    Prompt – If changes need to be made, which would they be?

APPENDIX 6

Interview Guide – PE HoDs

Ice Breakers

- How long have you been working within the physical education profession?
- What are your duties as a Head of Department of PE?

Section A: Fitness Programming in Schools and HoDs' Perspective

1. Did you notice any changes throughout the years with regards to instructional methods and practices used to teach and monitor fitness in schools?
2. Have the latest revisions made in the LOFs changed the approach to fitness in schools?
   Probe: If yes, in what way? If no, were schools tackling fitness in the same manner prior?
3. How is fitness being delivered within the PE curriculum? Is there a standardised practice that all teachers have to follow or does it vary from teacher to teacher?
   Probe: Does the PE department provide any lesson plans and schemes of work related to fitness?
   Probe: What about fitness testing?
   Prompt: Is there a reason why/why not?
4. Do you believe the fitness test is effective or not effective to measure students' fitness levels?
   Prompt – Why/why not?
5. How does the PE department use the results from fitness testing?

Section B: Equipment/PE Facilities

6. Do you think that schools have sufficient facilities to teach the topic of fitness within the PE curriculum?
7. Do you believe that the school is appropriately equipped with fitness equipment to deliver PE lessons as well as for monitoring fitness?
   Prompt – Why/ why not?
   Probe – Do all schools receive the same provision of equipment?

Section C: Other Influences to the Provision of Fitness Teaching

8. Are there specific fitness components that are more prioritised to teach within the topic of fitness?
   Prompt – Is there a reason why?

9. Are there any other barriers that you believe are faced with when it comes to implementing the fitness syllabus or do you believe that the provision of fitness in school is effective the way it is?
   Prompt – Why?