



MCAST

FUNFIT 5

RESEARCH REPORT

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GOVERNMENT OF MALTA
MINISTRY FOR EDUCATION,
SPORT, YOUTH, RESEARCH
AND INNOVATION

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UEFA SUPPORT TO THE MALTA FUN FIT 5 PROGRAMME

UEFA is committed to promoting grassroots football and fostering children's well-being, and we give our support to the Malta Fun Fit 5 (FF5) Pilot Project. This collaboration with the Malta FA (Malta FA) and MCAST seeks to engage children in regular physical activity and football while advancing our understanding of their impact on academic, physical, and overall well-being.

The FF5 Project is a fantastic initiative, that aligns seamlessly with UEFA's objectives. By studying the impact of physical activity and regular football in schools, the project contributes valuable insights into grassroots football development and supports the UEFA Football in Schools programme.

The collaboration with MCAST and the Malta FA ensures the research's significance and impact. This partnership provides access to resources, data, and expertise in grassroots football and physical activity promotion, enhancing the study's quality and relevance.

The research aims to understand the link between physical activity, football, and children's development. By focusing on the FF5 program's effectiveness in increasing physical activity levels, the study contributes to our understanding

of how these activities positively influence academic performance and overall well-being. The outcomes will be shared with other UEFA National Associations, maximising benefits across Europe.

The UEFA Football in Schools programme, running from 2020 to 2028, integrates football and physical activity into the educational curriculum. This initiative ensures positive football experiences for children, aligning with UEFA's vision of making football accessible to all.

This research contributes to our understanding of the role that football can play in the development of young people in school settings and help us improve the programme into the future.

In conclusion, the Malta FF5 Programme demonstrates evidence-based interventions, optimising outcomes in physical activity and football programmes within schools. By understanding the impact on academic, physical, and well-being domains, we can strengthen partnerships with Ministries of Education and health bodies, enhancing the impact of football in school settings. UEFA fully supports this project and hope it continues to positively impact the lives of children in Malta.

FOREWORD

DR ANGELO CHETCUTI

Malta FA General Secretary

As part of its mission to grow the game the Malta FA has the objective of fostering a positive social change to embrace a sporting culture. This overarching objective is crucial if we want to see more participation in sport – not only football – and consequently better results on the pitch.

At the basis of any sporting accomplishment, there is the assumption that there is a pathway that allows and supports the athlete to advance from the grassroots to the elite level. The starting point is to have the widest possible pool possible practicing the sport in the first place.

This study is one way in which the Malta FA is seeking to contribute towards that end. It came about to complement a wider initiative that the Fondazzjoni Inħobb il-Futbol (IFF) carries out through the provision of football sessions in all primary schools, a project which is backed by FIFA and UEFA, and is part of the Association's strategy.

While the benefits of sport for the wellbeing at the individual and the societal level are undisputed, decision-making ought to be informed and evidence-based. This is why the Association hopes that this initiative represents only the beginning of what hopefully grows into a shared goal that feeds policy-making and eventually leads to the much-needed paradigm shift for sport in Malta.

I would like to thank the MCAST researchers who worked on this research project and the team within the IFF, all of whom did so passionately and with the necessary academic rigour. I trust their work will be complemented with further research in the future.

ANN MARIE CASSAR

MCAST, Institute of Community Services - Director

The Institute of Community Services is unique in its amalgamation of professionals hailing from different sectors due to the wide array of courses that it offers. When the opportunity arises, collaboration across sectors eliminates the possible compartmentalisation of these same sectors, resulting in an exchange of practice between the different communities of practitioners. This research study is the epitome of such a collaboration, not only between different entities but also within the research team, which provides different perspectives and offers the opportunity to reach new heights in our approach to physical activity in schools.

The team is composed of four individuals who share a passion for research and who carry out their work with fierce academic rigour. This is witnessed in the lengths taken to ensure a sound methodology throughout the study. What stands out in this team, is that the researchers hail from different sectors which therefore allowed for different perspectives to be exchanged, with the sole purpose of investigating physical activity in primary schools. The interdisciplinary approach adopted by the team brought together different communities of practice to discuss and, more importantly, question current practice. Many times we do not question what we do, nor do we dare to visit spaces that might not provide the answers we expect, however the main aim of research is to question and challenge our daily practices. Only so can we combat complacency.

The analysis and findings stem from solid methods that allow statistically significant recommendations to be made. As a vocational college, MCAST in its continual collaboration with different stakeholders, is not only preparing learners for their journey beyond college but also delving into research projects that pave the way for a clearer direction and informed decisions to be made when setting the path ahead.

We are determined to continue to push boundaries through research even though this may take us out of our comfort zones. Our mission remains the provision of quality education to all learners.



PROFESSOR JOACHIM JAMES CALLEJA

MCAST Principal/CEO

As a Community College, I am very pleased to associate MCAST with the Malta FA partner of UEFA/FIFA on a research project which addresses the well-being of our young generations.

This study FF5 Research Report represents a major achievement in our efforts to create a comprehensive educational environment and reflects the strategic actions outlined in MCAST's strategic plan. It also represents our College's value of giving learners a holistic education that captures their mental as well as their physical mind set.

In fact our partnership with the Malta FA (Malta FA) showcases our commitment to both academic excellence and the overall well-being of our students. This aligns with our goal of fostering a community-focused education system. Our college's core values are centred around the idea that education goes beyond conventional academic accomplishments. We prioritise the development of a community college by actively working towards fostering an inclusive educational environment that caters to the physical and emotional well-being of every student.

MCAST's strategy is strengthened by our aim to expand local and international partnerships, as demonstrated by our collaboration with the Malta FA. This highlights the importance of working together to enhance our educational mission. Investing in modern infrastructure and technology is crucial to our strategic plan, as it helps create a learning environment that fosters academic, physical, and emotional growth.

This commitment is also in line with the foundation of our research initiative, providing the resources needed to thoroughly explore the effects of daily physical activity on the development of our students.

Ensuring the quality and relevance of our education system is of utmost importance, as we constantly work towards improving student learning experiences. This commitment guarantees that our educational programmes are both intellectually challenging and adaptable to the needs of individuals and the economy. The "FF5 Research Report" illustrates a strong dedication to promoting the inclusion of daily physical activities in educational programmes. This approach advocates for a balanced life style that is much needed in a society that is dominated by a culture of speed and comfort living.

This report serves also as evidence to our shared commitment to enhancing public health and promoting equal opportunities for physical activity among children.

I want to express my sincere appreciation to all those who contributed to this project, from the hardworking researchers to our passionate students and teachers, and the support of the Malta FA. Our combined efforts have not only made our vision of mens sana in corpore sano a reality but have also paved the way for future initiatives that will continue to have a positive impact on our community and beyond.

Finally, I extend an invitation to my fellow educators, policymakers, and community leaders to come alongside us in this transformative journey. Let's put the insights and recommendations from the "FF5 Research Report" into action. By adopting the strategic measures of MCAST and incorporating daily physical activity into our educational practices, we can create an environment where students excel in all areas of their lives.

Let's work together to create a better future for students, making decisions that will lead to a brighter and more inclusive tomorrow.

GARETH SCIBERRAS

Inġobb il-Futbol Foundation Chairman

It is common to hear that the current level of our children's daily amount of play and physical activity is critically at its lowest. With advancements in technology and the fast pace of parents' lives, more effort is often required to help our young children find the time and space to learn basic motor skills as well as provide them with a safe environment where they can have fun during active play.

The extent of this need is what the FF5 project wanted to measure and address. From the detailed Research Study performed by the Inġobb il-Futbol Foundation (IFF) in collaboration with a team of researchers from the Malta College of Arts, Science & Technology (MCAST) the following report has been created to shine a spotlight on the effect a small amount of daily activity, during school hours, can have on our children's physical and mental health.

The researcher's contributions include qualitative and quantitative findings arising from the results of hypothesis tests carried out during the project, to detect any statistically significant effects that arose from the daily activity that was offered throughout the project.

In line with its strategy, the Inġobb il-Futbol Foundation is committed to growing and improving grassroots football whilst contributing towards a positive social change and a sporting culture in an inclusive way. Therefore, having witnessed the level of dedication and effort by the whole team involved in this project, I am confident that this work will impact its readers and instigate a drive to continue developing a nationwide program to incorporate more daily activity in our scholastic system for the benefit of our children's wellbeing.

MEET THE RESEARCHERS



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KEY TERMS AND ABBREVIATIONS

APW	Academic, Physical and Wellness
BMI	Body Mass Index
CI(s)	Confidence Intervals
DLAP	Directorate for Learning and Assessment Programmes
FF5	Fun Fit 5
H_n	Hypothesis _{number}
LOF	Learning Outcomes Framework
LSE	Learning Support Educator
MEYR	Ministry for Education, Sport, Youth, Research and Innovation
Malta FA	Malta FA
MCAST	Malta College of Arts, Science and Technology
MSLSS	Multidimensional Students' Life Satisfaction Scale
NAO	National Audit Office
PA	Physical Activity
PE	Physical Education
RH_n	Research Hypothesis _{number}
RQs	Research Questions
SLT	Senior Leadership Team
TGMD	Test of Gross Motor Development
WHO	World Health Organisation

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EXECUTIVE SUMMARY

This report presents the findings and conclusions of a research study carried out to explore the implementation and effects of a daily physical activity (PA) programme in Maltese state primary schools. In the context of an increasing readiness to address physical activity in local children and in the interests of promoting better public health, a more systematic approach to physical activity provision in Maltese public schools presents an opportunity to provide all children attending Maltese state schools with equal access to its benefits. The Fun Fit 5 programme was an expression of such readiness and involved the provision of daily physical activity sessions to state school students in Year 4.

The study took the overall form of an experimental design, incorporating mixed methods to more fully understand the various experiences of all major stakeholders in relation to the Fun Fit 5 programme. While only one class in each of the three schools was provided with daily physical activity sessions, a second class was recruited as a control in each instance. This allowed for pre- and post-testing to be carried out across the entirety of the sample to identify changes due exclusively to participation in the daily physical activity sessions.

Tests spanned academic, physical, and wellness domains to accommodate a holistic appreciation of the potential effects of regular physical activity participation in children. Qualitative interviewing was simultaneously carried out during the year to study the accounts of students, parents/guardians, members of the school leadership team, educators and coaches with respect to their experiences and views pertaining to the implementation of the programme.

Chapter 1 provides a detailed account of the background, context and motivations underlying FF5. The programme was implemented in three schools during the 2022/23 scholastic year and accompanied by an extensive research study to explore factors surrounding its organisation, delivery and effects.

Chapter 2 gives a technical account of the research methods used, including sampling, instrumentation, and data collection protocols, as well as how the data were ultimately analysed using a range of qualitative and quantitative techniques.

Chapter 3 provides the results of all such methods of analysis used. First, the chapter overviews the qualitative findings pertaining to the delivery and implementation of the daily physical activity sessions. This is followed by a summary of the quantitative data and the results of the experimental analyses. Descriptive statistics are presented in the academic, physical and wellness domains to provide a quantitative account of all measurements taken, combined with results of the hypothesis tests carried out to detect any statistically significant effects attributable to the daily programme. The chapter closes with a more rounded appraisal of the qualitative data, including detailed stakeholder accounts.

Chapter 4 outlines the summarised findings, alongside some of the insights they yield and the implications they connote. Limitations of the study are finally discussed, and

the authors and research team give a series of data-driven recommendations. In a nutshell, the following are the main findings of this study:

- **Finding 1** highlights that there is no effect of a daily PA programme on an academic performance, and hence it confronts parents' persisting fear of their children obtaining lower grades if they miss a lesson per day due to PA.
- **Finding 2** focuses on the number of steps in schools, and it provides two important scientific understandings:
 - First, it shows that when our children DO NOT do daily PA at school, they rank with the lowest number of steps in school, when compared to international standards and practices.
 - Second, it also shows that when our children DO daily PA at school, they rank with the highest number of steps in school, when compared to international standards and practices.
- **Finding 3** shows that students who engage in daily PA sessions at school, on average make 1,597 (38%) more steps during school hour than those who do not do daily PA sessions at school.
- **Finding 4** suggests that the uncertainty that existed amongst the main stakeholders, had subsided as stakeholders provided positive feedback by the end of the project. Class teachers however, raised concerns about the coverage of content at the end of the programme, suggesting that providing additional support and possibly reducing content would address the issue.
- **Finding 5** suggests that it is imperative to recognise that there are four interdependent dimensions, namely (i) Educational Policies and Alignment, (ii) School Dynamics, (iii) Educational Logistics, and (iv) Belonging and Stakeholder Engagement, which all need to be recognised as indispensable for a holistic grasp of the programme's potential for adoption and replication in comparable settings.
- **Finding 6** Upon the conclusion of the FF5 programme, participants were requested to summarise their experiences and perceptions of the programme, using just three words. The resultant phrases have been visually represented in the word cloud, providing a snapshot of the sentiments and descriptions provided.

This report presents the findings and conclusions of a research study carried out to explore the implementation and effects of a daily physical activity programme in Maltese state primary schools. In the context of an increasing readiness to address physical activity in local children and in the interests of promoting better public health, a more systematic approach to physical activity provision in Maltese public schools presents an opportunity to provide all children attending Maltese state schools with equal access to its benefits. The FF5 programme was an expression of such readiness and involved the provision of daily physical activity sessions to state school students in Year 4.

The study took the overall form of an experimental design, incorporating mixed methods to more fully understand the various experiences of all major stakeholders in relation to the Fun.



CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The World Health Organisation (WHO, 2023) defines 'Physical Activity' (PA) as any bodily movement causing an expenditure of energy due to work done by skeletal muscles. This definition extends beyond structured, planned, and sports-focused activities, including everyday leisure and transportation routines such as walking, active recreation and play. Extensive research and literature in the domain of PA accentuate the pivotal role it manifests in the lives of children and society at large (Ohuruogu, 2016). PA is linked to improved social, psychological, and cognitive development, and children who engage in such activities are also more likely to increase opportunities for academic achievement and maintain energy balance, thereby contributing to healthy growth (Tambalis, 2022). In the same vein, the WHO (2023) highlights additional consecutive benefits of PA, including improved cardio-metabolic health (e.g., reduced dyslipidemia, glucose, and insulin resistance), enhanced bone health, and better mental health (evidenced by reduced symptoms of depression). Furthermore, PA is regarded as an essential tool in combating adiposity and plays a key role in weight control (Donnelly et al., 2009).

While research has consistently confirmed the benefits of PA, a sedentary lifestyle is being demonstrated to exert a significant impact on young children, leading to reduced quality and quantity of movements and a concerning trend of motor skill regression (D'Elia et al., 2020). Over the past fifty years, there has been a notable decline in the coordination of school-aged children, causing developmental delays (D'Elia et al., 2020). Concurrently, obesity rates, particularly among children, have been on the rise (Yous et al., 2023), and the WHO (2023) has designated it as an 'epidemic'.

In response to this issue, the WHO (2023) has stressed the importance of creating and implementing preventive programmes to combat obesity, and among these is the goal of increasing PA. Consequently, there is a strong argument for schools to serve a pivotal role in fostering PA by integrating such initiatives into their curriculum. By providing structured and unstructured play opportunities during school hours, educational institutions can significantly increase children's levels of PA (Grgic et al., 2018). Such efforts not only align with the WHO's recommendations but also serve as a foundation for cultivating a healthy lifestyle (Biddle et al., 2019), wherein such matters are addressed in terms of societal, rather than individual, responsibility (WHO, 2023). A local study recently found an association between socio-economic status of parents, and the degree of sports and PA levels in their children (Dimech & Muscat-Ingloft, 2023). Any initiative designed to promote sport and PA in schools, in this sense, helps promote equity in terms of access to the benefits of such public health initiatives.

1.2 CONTEXT OF THE STUDY

The above concerns are applicable to the context of Malta, as rising apprehension exists concerning the escalating prevalence of obese children, as well as declining levels of PA. The Malta Childhood National Body Mass Index Study in Malta (2019) has shown that approximately 40% of school-aged children are obese or overweight. Similarly, The Malta Physical Activity Fact Sheet issued by the World Health Organisation (2021) shows that the estimated prevalence of sufficient PA levels amongst six-to-nine-year-old children in Malta is 55%. This reflects Fenech et al.'s (2021) claim that children in Malta are engaged in low levels of daily-to-vigorous PA. While obesity and low PA are two distinctive problems, we often discuss low PA as a component of broader initiatives designed to stem the prevalence of obesity, with the result that the two health issues often become conflated. In this sense, the current report is focused primarily on the physical inactivity issue and the potential effects of increased PA on children in Malta.

Various concerns surrounding low PA are linked to a number of factors, and within its bracket, include children's use of excessive screen time and a decrease in outdoor play (Bonello et al., 2019). This concern necessitates collaborative and concerted efforts from the government, schools, communities, parents and policymakers. A number of scholars have suggested that this can be achieved by raising awareness, investing in infrastructure and resources, and implementing school-based initiatives or programmes (Masini et al., 2020). Aligned with these concerns, an essential curricular area that places emphasis on PA during children's primary school journey in Malta is Physical Education (PE). PE is regarded as a basic subject which should contribute to a minimum entitlement of 5% of the distribution of learning which takes place within the Junior Years' cycle (National Curriculum Framework, MEDE, 2012). PE lessons are scheduled to take place on a weekly basis with the expectation that one lesson is to be implemented by a peripatetic teacher, and the other by the class teacher. The Performance Audit conducted by the National Audit Office (NAO, 2010) has shown that peripatetic teachers typically implement these lessons rather than class teachers. According to the NAO, several class teachers in Malta tend to either carry out, to varying extents, physical exercises and games between lessons and/or integrate such movement exercises through other subjects. Irrespective of the latter, the NAO detected a need for an increase in PA within schools as many children had less than the recommended four thirty-minute weekly sessions.

Given this call, the National Policy for Sport in Malta and Gozo 2017-2027 (MaltaGov, 2016) has recommended an increase in PA from pre-school to tertiary education, whereby it promotes more active recreational breaks and an increase in sports during and after school hours. Considering these outlined recommendations, the incumbent party's 2022 Electoral Manifesto emphasised several actionable propositions in the context of the sports sector in Malta. The Manifesto (Partit Laburista, 2022) recognises the inconsistency in the allotted time for PE sessions across Maltese schools. In response, the Government, proposed an extended time frame that endorses a daily PA model. These recommendations align with the primary objective underpinning the Fun Fit Five (FF5) programme and research study, as it was initially designed to augment students' engagement in PA within the school setting.

1.3 THE FUN FIT 5 - INCEPTION AND COLLABORATORS

The Fun Fit Football is a project led by the Malta FA (Malta FA). It is financially supported by UEFA and has been established through a memorandum of understanding with the local government. The primary objective of this programme was to promote the game of football in local primary schools aimed at children aged four to 11. A significant concern throughout the implementation of the Fun Fit Football among coaches and programme administrators pertained to children's struggles with basic fundamental skills such as coordination, balance, and timing. In response to this concern, the FF5 (FF5) was conceived as a branch of the *Inħobb il-Futbol* Foundation, spearheaded by Ivan Woods (Head of Grassroots Development) and Mark Gatt (Football in Schools Coordinator) on behalf of the Malta FA.



Figure 1 - The MCAST research team meets representatives from the Malta FA

From left to right: Heathcliff Schembri, Melanie Darmanin, Ann Marie Cassar, Matthew Muscat-Inglott, Marvin Spiteri, Renzo Kerr-Cumbo, Franco Agius, Mark Gatt

This led to the development of the programme, entailing the implementation of 45-minute daily PA sessions with young children in primary schools in Malta. FF5 represents the essence of the programme, with 'fun' and 'fit' reflecting the approach to PA, while the number 'five' signifies its daily implementation from Monday to Friday. This idea was presented to a research team specialising in Sports and Exercise, and in Early Years education, from the Institute of Community Services at the Malta College of Arts, Science and Technology (MCAST), under the direction of Ann Marie Cassar. The MCAST Research Team comprised of four researchers: Dr Melanie Darmanin, Dr Renzo Kerr-Cumbo, Dr Matthew Muscat Inglott, and Heathcliff Schembri, with assistance from one of the leading researchers at the Malta FA, Karl Attard (specifically involved when carrying out the anthropometric and physical testing). Furthermore, the pilot project was supported by the Ministry for Education, Sport, Youth, Research and Innovation (MEYR), the Directorate for Learning and Assessment Programmes (DLAP), the MEYR's Centre for Physical Education, Ministry for Health and Ministry for Environment, Energy & Enterprise.

Following the formation of the MCAST Research Team, an open call was issued by DLAP and three primary schools were selected after consecutive discussions with the Selection Board. The selection was based on a series of criteria, based on, but not limited to, the geographical area and the size of each primary school. Representativeness was achieved through a choice of schools in the southern, central and northern regions, reflecting small, medium and large overall sizes in terms of overall student populations and variable availability of equipment and facilities. For the research study, six Year 4 classes of eight and nine-year-old students participated in a longitudinal format over the course of one scholastic year.

The Malta FA appointed three coaches to implement the daily PA sessions: Franco Agius, Philip Attard and Nicole Sciberras. These coaches underwent curriculum training in the summer before the start of the scholastic year to become familiar with pedagogical tools which could be used to design the sessions. They were also introduced to the Learning Outcomes Framework (LOF) and the adoption of a cross-curricular approach for maximising the children's enjoyment. Consequently, the scholastic year 2022-2023 saw the implementation of the FF5 programme and research study conducted

sequentially yet interconnectedly, with a view to gaining a comprehensive understanding of the programme's nature and effects. For clarity, the 'FF5 programme' denotes the actual implementation of the PA sessions administered and delivered by the Malta FA and its coaches. The 'FF5 research study' refers to collecting and analysing data from various qualitative and quantitative research methods. The following section expounds on the synergies between the FF5 programme and FF5 research study and highlights their respective primary aims and objectives.



Figure 2 - The coaches assigned by the Malta FA - From left to right: Coach Philip Attard, Coach Franco Agius, Coach Nicole Sciberras

Before the commencement of the FF5 programme, a series of preliminary meetings took place. The research team, alongside representatives from the Malta FA, visited each of the participating schools, engaging in initial discussions with the head of school, assistant heads, class teachers, and LSEs. While highlighting the objectives of the programme and the research study, additional meetings were organised with the parents of students from both the treatment and control groups. These meetings were designed to facilitate open dialogue, providing parents with the opportunity to address any thoughts and inquiries.

1.4 RATIONALE OF THE FUN FIT 5 - AIMS AND OBJECTIVES

The researchers' personal motivations in gathering data for the FF5 research study stemmed from a profound commitment to enhancing the academic, physical and wellness (APW, Figure 3) of school children while looking to ascertain the real effects of promoting daily PA among young participants.



Figure 3 - The Academic, Physical and Wellness (APW) Paradigm

The researchers were driven by the desire to contribute to an evidence-based project, aiming to contribute more broadly to transformative practices in PE and holistic education. In addition, the overarching aim of implementing the FF5 programme was to introduce an enjoyable and regular PA session to align with the objectives set forth for PE in the National Curriculum Framework (MEDE, 2012). Consistently, the sessions aimed to expose children to a diverse range of movement and motor skills, thereby contributing to the development of physical literacy. Concurrently, the research aims delineated for the FF5 research study proceeded in conjunction with the FF5 programme as follows:

- To investigate the challenges and potential benefits associated with the nationwide implementation of a project which promotes daily PA.
- To assess the potential impact of daily PA on students' academic, physical and wellness (APW) development.
- To analyse and interpret the perspectives of the stakeholders involved in the project, including students, parents, teachers, Learning Support Educators (LSEs), Senior Leadership Team (SLT) members, and coaches.
- To identify lessons derived from this initiative in order to inform future pedagogical approaches pertaining to sports, exercise and PA within educational institutions.

In light of the above aims, the main research questions (RQs) underpinning the research study, along with their associated research hypotheses (RHs), were:

RQ₁: In what ways, if any, does a daily PA project in Maltese primary schools affect the children's academic, physical and wellness (APW) domains?

RH₁: There is a significant treatment effect resulting from the application of the programme on academic performance and cognitive functioning.

RH₂: There is a significant treatment effect resulting from the application of the programme on functional physical capabilities and anthropometry.

RH₃: There is a significant treatment effect resulting from the application of the programme on psychological and emotional wellness.

RQ₂: What are the challenges encountered, if any, when implementing such a nationwide project in Malta?

1.5 THE PURPOSE OF THIS TECHNICAL REPORT

The primary aim of this technical report is, further to a presentation of context, to report on the main findings of the research study by providing a detailed account of the methodology employed and the results obtained. The following chapters will outline the research methodology in three main phases. A detailed description of the data collection methods, sampling techniques, and ethical considerations are also outlined. The technical report then outlines the APW findings as they responded to the effects of daily PA sessions. The final chapter concisely summarises the main findings, highlights key aspects and their significance, and describes some of the research study's limitations, followed by evidence-based recommendations and potential actions and/or improvements for future initiatives.



Figure 4 - During one of the Fun Fit 5 sessions organised at Buskett



CHAPTER 2

METHODOLOGY

2.1 INTRODUCTION

This chapter covers all methodological decisions made throughout the research study, structured according to methodological approach (2.2), target participants (2.3), ethical approval (2.4), and research design (2.5). Finally, the data collection section is divided into two sections, pertaining to the research study's qualitative (2.6) and quantitative (2.7) aspects. The research study had three phases: the pre-test, intervention, and post-test, with all outcomes measured primarily in the APW domains.

2.2 THE METHODOLOGICAL APPROACH AND INTERVENTION

The FF5 research study was implemented alongside the FF5 programme, entailing delivery of daily PA sessions in Maltese schools at Year 4 over the 2022-2023 scholastic year. The main approach was based on a commitment to empirical research, focusing on observable and measurable outcomes. The design was mainly experimental, using treatment and control groups and pre- and post-testing phases. Random allocation across treatment and control was not possible as such, given the existing composition of class units; however, the selection of class units was entrusted to the SLTs in each school on request to be random.

The PA sessions that formed the basis of the FF5 programme spanned single lessons of 45 minutes and consisted of moderate to vigorous intensity based on the PE syllabus. The coaches were selected and employed by the Malta FA. They received training in the summer before the start of the scholastic year from the MCAST Research Team to become familiar with systems and approaches characteristic of Maltese state primary schools. A scheme of work and a series of session plans based around relevant competences for PE at Year 4 were created. These competences were selected because they represented an existing framework for structured PA in schools and were thereby ready to use and also mostly familiar in scope to the students. Two coaches delivered the majority of the sessions, with a third acting in reserve. The FF5 programme's sessions were staggered to be held either early (starting anywhere from 08:00 to 09:00) or later in the day (starting anywhere from 10:00 to 11:30). The early and late sessions were rotated such that no school would have most of their daily sessions either early or late, potentially confounding the effects of the sessions over the long term.

The early session was always delivered by two coaches simultaneously. This joint delivery served as a useful standardising measure. The two coaches would then go their separate ways to lead the same session at the remaining two schools individually. Sessions were rotated so that each school would receive an equal ratio of sessions taught by one or two coaches. In cases where either coach could not deliver, the reserve coach was called in. Over 97% of the total scheduled sessions throughout the year were delivered and the only sessions missed were those falling on a public holiday.

2.3 TARGET PARTICIPANTS

This research has strategically focused on Year 4 students, as this is when students start having exams at school, and hence, this population provided us a comprehensive and realistic scenario. Three Year 4 classes of eight to nine-year-old students attending state schools, namely, SGPC Pietà Primary Schools, SNC Rabat Primary School and STMC Żejtun B Primary School, agreed to participate following an open call selection process. Table 1 outlines the original matrix on which we based our choice of applicant schools and how the selected schools eventually fit this framework. A prerequisite was that each school must have a minimum of two classes in Year 4, with a view to one class acting as the treatment class receiving the daily PA programme and the other as a control, carrying on a regular routine.

	LARGE SCHOOL	MEDIUM SCHOOL	SMALL SCHOOL
NORTHERN AREA			SNC Rabat Primary School
CENTRAL AREA		SGPC Pietà Primary School	
SOUTHERN AREA	STMC Żejtun B Primary School		

Table 1 - Matrix for selection of schools

Each school was instructed to use a random process for selecting which class would be the treatment and which would be the control. A coin flip was suggested. SLTs were discouraged from making a conscious decision about which class should receive the treatment, given the potential for bias in this regard to affect the outcome of the research study in any number of unforeseen ways.

2.4 ETHICAL APPROVAL

Ethical approval was obtained from the MCAST Ethics Committee and the MEYR's Directorate for Research, Lifelong Learning and Employability. Written parental consent and children's assent were obtained for all participants for the various phases of the study. Given that Malta is a small-island state, the researchers were aware of the possible ethical limitations and considerations pertaining to such a context (Schembri & Sciberras, 2020) and addressed them accordingly.

2.5 RESEARCH DESIGN

The MCAST Research Team developed the research design after discussions with various stakeholders, including Malta FA and the UEFA research department members. The design was mainly experimental or a quasi-experiment/natural experiment, given the lack of true random allocation of participants across the treatment and control groups. A mixed-methods approach was developed on this foundation, using qualitative and quantitative data collection and analysis methods. While quantitative data allowed the main experimental hypotheses of the research study to be tested, qualitative data was included to establish a richer understanding of the programme's effects, taking into account the views and experiences of all the main stakeholders. The combination of these different forms of data ultimately facilitated a broader and more nuanced research study of the FF5 programme.

Qualitative data was intended to explore the realities encountered by students, SLT members, teachers, coaches, and parents, as follows:

- **Semi-structured interviews**, applying open-ended questions and following an interview guide, were held to gather data from the SLT members ($n=3$, SLT of the three chosen schools), the primary school teachers ($n=3$, class teachers of treatment groups), the LSEs ($n=2$, LSEs working in the treatment groups) coaches delivering the FF5 programme ($n=2$). Thematic analysis was applied to elicit meaning from the data collected.
- **Field observations** were held between January and April 2023 throughout the year by gathering observational and interpretive field notes.
- **Focus group interviews**, using open-ended questions and following a focus group guide to gather data from the students ($n=9$, selected and recruited by the class teachers) and the parents/legal guardians ($n=9$, parents/guardians of the selected students) were also held to dig deeper in the reality being explored.

The interview guides and the focus group guides for the pre-testing (October 2022) were developed before the initiation of the research study. Still, that used for post-testing (June 2023), although similarly designed, was planned later since it had to reflect the implementation of the FF5 programme and any relevant developments or occurrences.

Quantitative data was collected to test the main experimental hypotheses guiding the research study. These included both pre- and post-intervention testing carried out in October 2022 and June 2023, respectively, across both the treatment and control groups, on three main separate domains of dependent variables pertaining to APW outcomes:

- The **Academic outcome** was measured using a bespoke academic multiple-choice test covering Maltese, English, Mathematics, Science, and general reasoning. A bank of five multiple questions (per subject) was created and amended from recent past papers, resource packs issued by the DLAP, supporting documents provided by each core subject department, textbooks which were being used in Year 3 and 4 at the time, and general reasoning tests adapted from popular age-appropriate Intelligence Quotient (IQ) tests. The total academic score was calculated as the mean of Maltese, English, Mathematics and Science scores only. A sample of the academic pre-test is available in Appendix 1.
- The **Physical outcome** incorporated anthropometric, fitness and skill-based measures. Anthropometry was represented by height and body mass, combined as a single measure of Body Mass Index (BMI) in kg/m^2 . Only one measure of fitness was measured, namely speed, via a 18.3m sprint from a standing start. The Test of Gross Motor Development-3 [TGMD-3] (Ulrich, 2013) battery measured the skill-based component. The TGMD-3 is a standardised, validated and reliable test (Webster & Ulrich, 2017) that includes six locomotion skills, including running, skipping, sliding, hopping, galloping and jumping, and seven object control tests, including throwing (overhand, underhand and two-handed), catching, striking, kicking, and dribbling. These were treated as two separate outcomes: locomotion and ball skills. A sample of the TGMD-3 is available in Appendix 2.
- The **Wellness outcome** was measured using an existing validated psychometric scale consisting of 40 Likert-type items, namely the Multidimensional Students' Life Satisfaction Scale [MSLSS] (Huebner, 2001; Suldo, 2016). A sample of the MSLSS is available in Appendix 3.

Quantitative data were also collected via **pedometer** units during Phase 2 of the research study. A number of pedometer units were acquired from the Health Promotion and Disease Prevention Directorate, permitting gathering a week's worth of step counts from students in the treatment and control groups both during and outside of school hours.

QUANTITATIVE		QUALITATIVE	
PHASE 1 PRE-INTERVENTION			
Academic		Semi-Structured Interviews	
Academic Multiple-Choice Test (79 students)		SLT members (3) Class teachers (3) LSEs (2) Coaches (2)	
Physical		Focus Groups	
TGMD-3 (73 students)		Students (9) Parents/guardians (9)	
Wellness			
TGMD-3 (73 students)			
PHASE 2 INTERVENTION			
Physical		Observations	
Pedometer Testing (18 students)		4 researchers x 8 school visits (32 observations)	
PHASE 3 POST-INTERVENTION			
Academic		Semi-Structured Interviews	
Academic Multiple-Choice Test (79 students)		SLT members (3) Class teachers (3) LSEs (2) Coaches (2)	
Physical		Focus Groups	
TGMD-3 (73 students)		Students (9) Parents/guardians (9)	
Wellness			
TGMD-3 (73 students)			

Table 2 - Phases of data collection methods and sample sizes

2.6 QUALITATIVE DATA COLLECTION

As briefly explained in section 2.5 above, the FF5 research study included a qualitative component to obtain a deeper understanding of the implementation of the FF5 programme and its effects. Since the quantitative findings could not be expected to tell the entire story, the qualitative findings were entrusted with shedding light on key aspects the experimental tests were likely to miss. As with the quantitative approaches, the qualitative data collection happened across the three phases, with semi-structured interviews and focus groups held in Phase 1 and Phase 3 (pre and post) and a series of observations of the sessions delivered in Phase 2.

2.6.1 SEMI-STRUCTURED INTERVIEWS

2.6.1.1 Semi-Structured Interviews – Data Analysis

Two researchers were responsible for overseeing this data collection phase throughout the study. During the initial and final phases, data were gathered as follows:

- Three members of the combined SLTs were selected following a call for participation. At least one SLT member per participating school needed to participate in this part of the research study. It was made clear that the chosen representative could be any member of the SLT team and that participation was entirely voluntary.
 - The intention behind these interviews was to further understand the views of the leaders in schools as main stakeholders in the running of the FF5 programme. It was also intended to identify said leadership's philosophical view to further understand the practical impetus of joining such a programme.
- Three class teachers (from the treatment groups), one from each participating school, were also interviewed to explore their views on the day-to-day running of the FF5 programme.
 - These interviews were a critical means to comprehend teachers' views when participating in the FF5 programme, particularly in managing their syllabus commitments. Moreover, these interviews allowed educators to freely

express their views (in Phase 1), outline any possible challenges (in Phase 3), and share any observations they had regarding the students' progress and development.

3. Two LSEs (from the treatment groups) were also invited to participate in this part of the research study on a voluntary basis.
 - Their views were particularly important to explore how they managed to assist students with a statement of needs within a shorter daily time in class and to explore their observations on the development of these students. Moreover, their views were important to see how inclusive the FF5 programme is.
4. The two main coaches working on this project were also interviewed as they were the main stakeholders who could give clear insights about the practical application of the FF5 programme.
 - Their daily hands-on involvement with the students, teachers, LSEs and SLT members, and their use of school facilities, among others, could provide a detailed understanding of the realities surrounding such a programme. They could also provide us with a detailed understanding of the development they may have observed in the participating students and the challenges they may have encountered along the way.

2.6.1.2 Semi-Structured Interviews – Data Analysis

All interviews were carried out by two researchers, each assuming distinct roles. The first researcher interviewer followed the interview guide, primarily focusing on posing questions while maintaining a conversational interaction with the participants in their preferred language. The second researcher interviewer adhered to a pre-established data collection matrix, which was outlined prior to the interviews.

This matrix streamlined the data collection process. It allowed for the immediate recording of direct quotations and proved invaluable when interviews could not be recorded, respecting the participant's preferences. This allowed the second researcher interviewer to supplement the notes with observations of non-verbal cues and room dynamics. The matrix was predominately completed during the interview, ensuring that all requisite information was accurately captured.

2.6.2 FOCUS GROUPS

The same methodology employed for the individual interviews was also applied to the focus group interviews conducted with three students from each school and their respective parents or guardians. Nine students and nine parents participated in the focus group interviews.

2.6.2.1 Focus Groups – Data Collection

The students and parents were selected according to a convenience/opportunity sampling strategy with the assistance of the members of the SLT. The participants were approached and invited to partake in two focus group interviews. After giving their consent, participants were allowed to attend the interviews in person or remotely. While all interviews were initially scheduled for in-person meetings within the school premises, one group of parents opted for an online meeting due to work commitments. The focus groups were implemented in Phase 1 and Phase 3, in September 2022 and June 2023, respectively.

Focus groups with the students were held at their respective schools, away from other students, teachers or SLT members, in a way that they could feel comfortable sharing their thoughts without any pressure. They were held separately in different subgroups of 3 students per school.

Focus groups for the parents/guardians were also organised in each school, yet they were given the option to either join on school premises or online through MS Teams, depending on what was most convenient for them. One of the researcher interviewers was mainly responsible for running the focus groups, while the other was mainly responsible for noting what was said and observed.



Figure 5 - During one of the Fun Fit 5 sessions held in the classroom

2.6.2.1 Focus Groups – Data Analysis

Similarly to the semi-structured interviews, all focus groups were carried out by two researchers, each assuming distinct roles. The first researcher interviewer followed the focus group guide, primarily focusing on posing questions while maintaining a conversational interaction with the participants in their preferred language. The second researcher interviewer adhered to a pre-established data collection matrix, which was outlined prior to the interviews. Similarly to the semi-structured interviews, this matrix streamlined the data collection process.

2.6.3 OBSERVATIONS

In addition to collecting quantitative and qualitative data through participant involvement, the researchers recognised the importance of observing the actual PA sessions being implemented. The primary objective of these observations was to gain a deeper understanding of how these sessions were carried out, the specific types of activities that were included, and how students perceived them.

2.6.3.1 Observations – Data Collection

Given the diverse backgrounds of the researchers in sports and education, it was determined that all researchers should participate in the observation of the PA sessions. This approach was intended to ensure that observations were conducted with high detail and comprehensiveness. The researchers also chose to conduct the observations from different standpoints. A structured observation guide, the observation proforma was developed and used to facilitate these observations (Darmanin et al., 2023). This guide allowed the researchers to establish clear protocols before observing the subjects and events. In addition, the researchers refrained from interfering with the session setup and the observations were only shared and discussed at the end of the FF5 programme. In other words, in the periods between observations, the researchers consciously strove to refrain from discussing what they had observed until all observations were completed.

All four members of the MCAST Research Team visited the school in Pietà three times, the school in Rabat three times, and the school in Żejtun B twice. The third visit to Żejtun B could not be held due to Carnival activities. Table 3 shows the FF5 session observations.

SESSION	DATE	TIME	SCHOOL	COACHES	OBSERVERS
1	16/1/2023	09:15-09:55	Pietà	A&B	4
2	16/1/2023	11:20-12:00	Żejtun B	B	4
3	17/2/2023	08:30-09:15	Rabat	A&C	4
Żejtun B not observed because of Carnival Activities					
4	6/3/2023	09:30-10:10	Rabat	A&B	4
5	6/3/2023	11:20-12:00	Pietà	B	4
6	3/4/2023	09:30-10:10	Pietà	B&C	4
7	28/4/2023	08:45-09:30	Rabat	A&B	4
8	28/4/2023	10:15-11:00	Żejtun B	A	4

Table 3 - FF5 session observations

On every visit, the researchers arrived at the school approximately 10 minutes before the start of the session. The researchers took different positions both in terms of physical space and interpretative stance. They all took different positions in space for observation purposes, including one of the researchers always taking a bird's eye view position from a higher floor than the area designated for the session. Furthermore, they all allowed their own perception to guide their personal observations, assuring that their expertise would be the main factor guiding their insights. This ensured a fuller picture was likely to emerge when recombining and discussing observations communally. Notwithstanding the differences between observers, the Observation Proforma data collection tool was still intended to guide and provide cohesive direction to the four researchers. Although colleagues in the project, the researchers had taken a consensual agreement to never discuss their observations throughout Phase 2 to avoid influencing each other.

2.6.3.2 Observations – Data Analysis

After all eight observations, the researchers set a number of meetings where to put all their observations on the table and discuss. They identified the main similarities and differences and allowed the main themes to emerge from this group analysis exercise.

2.7 EXPERIMENTAL OUTCOMES

Quantitative data was collected from both treatment and control groups in each school, before the FF5 programme intervention (end of September 2022), and exactly after the full eight-month intervention, in the first week of June 2023. Two Year 4 classes per school (one as treatment group and one as control group) participated in this research study. Out of an initial pool of 87, a total of 83 students ended up participating in this research study. SNC Rabat Primary School had 27 students participating, SGPC Pietà Primary School had 20 students participating, and SMC Żejtun B Primary School had 36 students participating.

Due to students missing various aspects of the testing for a number of reasons, including simple chance absenteeism, Table 4 outlines the sample sizes per domain used in the final analysis.

DOMAIN	SUBDOMAIN	CONTROL (N)	TREATMENT (N)	TOTAL (N)
ACADEMIC	Maltese	38	41	79
	English	38	41	79
	Maths	38	41	79
	Science	38	41	79
	Overall	38	41	79
	Reasoning	38	41	79
PHYSICAL	BMI	40	42	82
	Speed	34	39	73
	Locomotion	33	40	73
	Ball skills	33	40	73
WELLNESS	Family	38	38	76
	Friends	38	38	76
	School	38	38	76
	Living environment	38	38	76
	Self	38	38	76

Table 4 - Sample sizes per domain used in the final analysis

2.7.1 ACADEMIC DOMAIN

The academic domain was based on multiple-choice tests administered to all participants covering Maltese, English, mathematics, science and general reasoning proficiency. The domain was intended to include the core subjects, with the addition of general reasoning to capture aspects of cognition amenable to possible effects from PA, yet perhaps missed by the core subjects.

2.7.1.1 Academic Domain - Data Collection

To construct the assessment tool, a pool of five multiple-choice questions per subject was adapted from recent past papers, resource packs provided by DLAP, supplementary materials by each core subject department, and textbooks in use during Year 3 and Year 4 at the time of the research study. To more fully measure cognitive outcomes, a series of abstract, spatial, and logical reasoning questions were also included in the test, based on popular age-appropriate IQ testing questions. It is valid to point out that the questions asked required thinking skills based on the student’s academic capabilities and logical reasoning. The reasoning test was reviewed to reduce the risk of cultural bias. It was not based on any assumptions of intelligence as a fixed, heritable, physical general structure detectable in the brain. Indeed, including the test both pre- and post-intervention confirms a core assumption that whatever construct was being measured was likely fundamentally alterable. The general reasoning component was nonetheless treated as a separate construct and not included in the total academic score.

The data collection plan involved two assessment sessions: one at the start of the academic year in October 2022 and another at the end of the academic year in June 2023. For practicality and to maintain an environment familiar to students, the tests were conducted in their respective classrooms. All students, including those in the treatment and control groups, were required to respond to a total of twenty-five questions, with five questions dedicated to each subject area (Maltese, English, mathematics, science, and cognitive aspects). A similar set of twenty-five questions was prepared for the second test during Phase 3 in June 2023.

Students who typically received support from an LSE during these tests were provided with the same assistance during these sessions (i.e. access arrangements). This also extended to students who required the support of a reader or needed other auxiliary resources, such as a number grid. The support of a scribe was not necessary during these tests since students were not tasked with writing; they were instructed to select the correct answer from three given options by ticking it.

During the test sessions, all students responded to the twenty-five questions on physical test papers within the classroom setting. Following the test period, the researchers collected the completed test papers, which were then securely stored under lock and key. This identical process was followed in both Phase 1 (pre) and Phase 3 (post). During the test sessions, two researchers were present at each of the three selected schools. One researcher provided clear instructions to the student groups in the treatment group, addressing any questions or concerns raised by the students before commencing the session. The exact instructions were given to students in the control group from another researcher. In addition, students were informed that the task had no time constraints and were encouraged to take their time.

To ensure consistency, the researchers ensured that both tests in each respective school began simultaneously. Additionally, the test sessions across all three schools were scheduled for the same time immediately following the morning assembly. Following the conclusion of both assessment phases, the two researchers undertook the task of grading the papers. One of the researchers corrected the pre-tests collected whilst another corrected the post-tests, with the answers on the tests cross-checked by both researchers, utilising an answer sheet for efficiency. It should be noted that all questions were closed-ended, multiple choice, with only one correct answer out of three. Correct responses were awarded a score of '1', while no marks were allocated for incorrect answers. These marked tests were thoroughly reviewed, and the corresponding scores were recorded for subsequent analysis.

2.7.1.2 Academic Domain – Data Analysis

The scores were entered into a master dataset, with a score out of a maximum possible of five in each subject area. In other words, each student obtained a score out of five for each of Maltese, English, mathematics, science, and general reasoning. A total academic score was then calculated by taking the mean scores for all tests, excluding the general reasoning test. This was done so that the academic score would reflect the core subjects only. This translated into six dependent variables in the academic domain (RH1), which could all be treated as separate experimental outcomes, probing for the effects of the intervention through variations in scores across the treatment and control groups.

2.7.2 PHYSICAL DOMAIN

The Physical domain incorporated four sources of data collection, namely (i) anthropometric testing, (ii) speed testing and the testing of (iii) Gross Motor Development, which were applied pre intervention (Phase 1) and post intervention (Phase 3) to both treatment and control groups. The level of students' PA (iv) was also measured during Phase 2 of the research study. Data collection for the first three areas was held in the same, large, indoor sports facilities in Ta' Qali, permitting safety and consistency in case of adverse weather condition.

2.7.2.1 Anthropometric and Speed Testing

Anthropometric and speed testing was carried out on all participating students in the form of height and body mass in October 2022 and June 2023.

2.7.2.1.1 Anthropometric and Speed Testing – Data Collection

The same expert researcher was responsible for data collection both in Phase 1 and Phase 3. The researcher was assisted by coaches with extensive experience in collecting similar data from athletes in their respective coaching environments. The same calibrated weighing scale was used to collect students' body mass (in kg) from all the students in both phases. A stadiometer was used to collect the height of the participants in centimetres.

A set of speed gates was used during the TGMD-3 running test to test speed too. These speed gates were WITTY, Wireless Training Timer; Microgate, Italy.

Students were requested to remove their shoes for their height and body mass to be measured. The reading for both height and body mass was taken twice by the same expert researcher while data was entered on a spreadsheet software application and saved in a password protected folder.

After having their height (in cm) and mass (in kg) measured and recorded, the students made their way into the indoor sports facility, with indoor court flooring, where a set of speed gates was set up at a distance of exactly 18.3m. Students, who used their usual PE shoes, assumed a starting position behind the starting speed gates, such that the time began upon the torso crossing the first speed gate. For anthropometric and speed readings, data were ready to be entered into the master dataset.

2.7.2.1.2 Anthropometric and Speed Testing – Data Analysis

The anthropometric and speed data were ultimately operationalised as dependent variables, measured in kg/m² for BMI and seconds for speed over 18.3m. These constituted outcomes against which experimental hypotheses could be tested in terms of treatment effects.

2.7.2.2 Gross Motor Development

All participants in both the intervention and control group were tested for their level of gross motor development before the intervention, in September 2022 and after the intervention, in June 2023. The students were tested for their level of locomotor development and for their level of object control.

2.7.2.2.1 Gross Motor Development – Data Collection

The TGMD-3 protocol was then applied for data collection and analysis to explore the gross motor development of all participants. This battery of tests is due to a long history of development and validation, originating with the TGMD-1. It has been found to exhibit high levels of reliability and validity (Webster & Ulrich, 2017). The battery involves 13 tests divided into two domains, namely locomotor (six skills) and object control (seven skills).

Considering that testing is rather time consuming, schools had their tests done on different days. Żejtun B students attended on the first day, followed by Rabat, and finally Pietà. Students allocated to the treatment and control groups were mixed and all tested together. While the TGMD-3 protocol was followed in every other regard, for practical reasons, the students were only given one trial each after a demonstration by the testers. The researchers were restricted by having to complete all testing within school hours, allowing for transport back to school from Ta' Qali. This method was preferred over splitting schools further to reduce the risk of disruptions to consistency across testing days. It was also necessary to complete all testing before the FF5 PA sessions actually started.

With regard to the use of only one trial instead of two, it was reasoned that if a child is being tested for gross motor skill, the child would either know or not know how to do the skill. With one trial only, analysts would be well aware of the student's capabilities in this respect. In June 2023, the same protocols were maintained for Phase 3 post-testing. The demonstration was always performed by the same person throughout the research study for Phase 1 and Phase 3. All the test areas were set with markers and tape on the flooring of the sports facility used for data collection. That way, all students were tested in the exact same space of the facility with the same orientation and environmental influences.

Two high-definition action cameras were used to record all performances. One of the cameras was placed in front of the student, while the other was set to their side. Therefore, every student tested was captured from the front and side. The videos were saved on an external hard disk and kept in a secure place at the Malta FA headquarters, while another copy was kept in a password-secured folder on one of the researcher's laptop. The data collected in Phase 1 was kept and organised as shown below in Table 5. The data from Phase 3 was later organised in the same way. This exercise resulted in a total of 4134 video clips that needed to be analysed according to the TGMD-3 protocol.

	RABAT		PIETÀ		ŻEJTUN B		"SCHOOL"
Locomotor Subtests	Front	Side	Front	Side	Front	Side	"Camera Angle"
1. Run	27,25	27,25	20,20	20,20	36,31	36,31	Example: 36,31 No. of Students Phase 1, No. of Students Phase 3 Explained: In Żejtun B, there were 36 students in Phase 1 & 31 students in Phase 3 who performed the skills listed and who were recorded both from the front and the side.
2. Gallop	27,25	27,25	20,20	20,20	36,31	36,31	
3. Hop	27,25	27,25	20,20	20,20	36,31	36,31	
4. Skip	27,25	27,25	20,20	20,20	36,31	36,31	
5. Jump	27,25	27,25	20,20	20,20	36,31	36,31	
6. Slide	27,25	27,25	20,20	20,20	36,31	36,31	
Object Control Subtest	Front	Side	Front	Side	Front	Side	
1. Two-hand strike of a stationary ball	27,25	27,25	20,20	20,20	36,31	36,31	
2. Forehand strike of a self-bounced ball	27,25	27,25	20,20	20,20	36,31	36,31	
3. One hand stationary dribble	27,25	27,25	20,20	20,20	36,31	36,31	
4. Two hand catch	27,25	27,25	20,20	20,20	36,31	36,31	
5. Kick a stationary ball	27,25	27,25	20,20	20,20	36,31	36,31	
6. Overhand throw	27,25	27,25	20,20	20,20	36,31	36,31	
7. Underhand throw	27,25	27,25	20,20	20,20	36,31	36,31	
Total no of video clips	351,325	351,325	260,260	260,260	468,403	468,403	
	RABAT		PIETÀ		ŻEJTUN B		
	Front	Side	Front	Side	Front	Side	
Video Clips	676	676	520	520	871	871	4134 video clips

Table 5 - Organisation of TGMD-3 video clips

2.7.2.2.2 Gross Motor Development – Data Analysis

None of the researchers involved in the data collection participated in the analysis of the TGMD-3 skills to eliminate all potential biases in recognising potential improvements from the pre- to post-intervention phases. An official call for 'blind analysts' was issued, which garnered a healthy response from local sports and exercise science students at Bachelor's and Master's levels, as well as various professionals and volunteers representing multiple local clubs and associations. A team of seven analysts were recruited and given four hours of training on the TGMD-3 protocol. Inter-rater reliability testing was employed to ensure a satisfactory level of agreement was achieved through the training process. Videos and materials prepared for the TGMD-3 protocol and available on the official website were used for training.

Finally, the 4134 video clips were shuffled and coded so the analysts could not identify the children, their school, or whether a given performance occurred pre- or post-intervention. Each analyst was given two skills to analyse, such that each student would have their performances analysed by the same person both pre- and post-intervention (albeit blinded to which phase was which). Six blind analysts were employed in this process, with a seventh analyst (who emerged during training as consistently having the highest level of agreement with all other raters) responsible for overseeing the analysis and discussing complex or unresolved judgments raised by the remainder of the team. The analysts finally completed a standardised spreadsheet prepared by the researchers with their findings, and the data were entered into the master dataset for analysis by the MCAST Research Team. The TGMD-3 eventually yielded two dependent variables, namely, locomotion and ball skills (also referred to as object control), for testing the experimental hypotheses (RH2).

2.7.2.3 Students' Level of Physical Activity

With a special interest in the relationship of students' level of PA with daily PA in schools, the researchers have also quantified the students' level of PA in the three schools. In this case, data was collected in Phase 2, during the intervention programme, from the students' own environment, before, during and after school hours.

2.7.2.3.1 Students' Level of Physical Activity – Data Collection

A total of 45 pedometers were used to gather a week's worth of step counts from students in the treatment and control groups both during and outside of school hours. Two logbooks, one for the students and one for the class teachers were also used to collect further specific data.

The part of the research study based on five days of pedometry data entailed its own methodological processes and challenges. A parallel group randomised controlled trial design was employed for this phase of the research study. Given the availability of pedometer units, the sample size was limited to 45 children only. A sample of 45 students was therefore selected using an online random number generator from the population of 87 FF5 research study participants. This simultaneously resulted in random assignment across treatment and control.

A meeting to explain the aim, benefits, and procedures was held with the SLT and class teachers. Class teachers agreed to convey the aims of the research study and pedometer use procedures to the children. The selected participants from the two groups were given an information booklet in Maltese and English, containing information on the use of pedometers, measurements and procedures, safety and ethical issues and the schedule of the treatment period.

Children were also given a logbook to enter after-school time activities (both active and sitting) and duration. Another logbook was given to each class teacher to record two data entries: Entry one included recording data from the time the children put on the pedometer in the morning until arrival at school (08:40). Entry two covered the child's time at school (08:40 till 14:00). Time was allowed for SLT members and Class Teachers to ask and clarify issues with the researcher.

Participants were asked to wear the pedometers clipped to their waistband for five days. Each pedometer was worn for the whole day, upon waking up to just before returning to bed at night. The students were instructed to remove the pedometer only while changing clothing and bathing.

When they arrived in class, the class teacher entered the data from the pedometer in the teacher's logbook. Before leaving school, the class teacher took the second reading. Children were given a logbook to enter the type and length of their activities at home, although this data was not used due to too many missing entries. They continued this routine for five consecutive days (Monday to Friday). To avoid loss of data, children were encouraged not to press any of the pedometer buttons or look at the pedometer display to avoid reactivity bias.

After the data collection period ended, the class teachers' logbooks and both groups' pedometers and logbooks were collected for analysis. Each pedometer was connected to a computer for data extraction. A second researcher member then checked all data for possible mistakes, and all issues were tackled by going back to the raw data within the pedometer when data lines showed possible mistakes. This process was repeated several times and checked by a third research team member before the data was used. Once the pedometers' data was correctly entered on the spreadsheet, the same process was followed for the teachers' and students' logbooks.

2.7.2.3.2 Students' Level of Physical Activity – Data Analysis

There was a high attrition rate due to missing data points. Following listwise deletion of cases, 18 complete cases were included in the final analysis. The main two sub-research hypotheses for this part of the research study pertained to differences in steps between the treatment and control groups during school hours and throughout the day. As a static group comparison, a basic comparison of means was carried out as follows:

SRH_1 : Average mean steps at school of the treatment and control groups are significantly different.

SRH_2 : Average mean steps throughout the entire day of the treatment and control groups are significantly different.

2.7.3 WELLNESS DOMAIN

While psychological wellness can be considered an important yet complex component of overall health and well-being, practical constraints dictated the necessity for a single instrument with the capacity to provide measurable insights in this domain to augment the qualitative findings. A popular standardised scale was therefore selected following discussion by the MCAST Research Team.

2.7.3.1 Wellness Domain – Data Collection

The MSLSS was used to collect data related to the students' wellness domain. The MSLSS is a validated scale (Huebner, 2001; Suldo, 2016) stratified across five domains of students' life satisfaction: friends, self, school, family and the living environment. The scale is designed for children in the age range (≥ 10 years) of Year 4 students in Malta.

The 40 items comprising the MSLSS were measured on a six-point Likert scale, with the labels "strongly disagree" (1), "disagree" (2), "slightly disagree" (3), "slightly agree" (4), "agree" (5) and "strongly agree" (6). The items included statements of opposing valence requiring reversal of scores, designed to measure students' satisfaction in the five life domains of friends, self, school, family and the living environment.

The MSLSS was implemented in all three schools in the first week of October 2022, as the FF5 daily PA programme was underway, and in June 2023, after the FF5 daily PA programme had ended. Two research team members were responsible for implementing the MSLSS in parallel while the other two research team members were conducting the academic testing.

A printout was prepared for every participating student with only the reference code marked to add a layer of anonymity to the data collection process. The same researcher delivered the presentation and explanation the same way to each class. The first three items of the scale were read and explained with all students working concurrently. Once the students were comfortable with the format of the scale, they were encouraged to proceed with completing the remainder of the items privately. The six-point Likert scale was reproduced on the page for every item, so students simply needed to circle their desired response. The researchers moved around the room on hand to respond to any difficulties experienced by the students. Where necessary, the items were translated verbally into Maltese. Students were given as much time as needed to complete the entire scale, which rarely exceeded 20 minutes in any of the data collection sessions. The researchers checked all submissions for missing items when handed in and duly promptly rectified them with the students in question.

2.7.3.2 Wellness Domain – Data Analysis

The data from the printed MSLSS forms were entered manually into a spreadsheet, and a scoring algorithm (Huebner, 2001; Suldo, 2016) was used to obtain results for each of the five life satisfaction domains. These were finally entered into the master dataset, resulting in dependent variables for the five outcomes, enabling the testing of experimental hypotheses for each (RH3). The statistical logic outlining all hypothesis tests is clearly outlined in section 2.7.4.

2.7.4 DATA ANALYSIS – RATIONALE FOR EXPERIMENTAL HYPOTHESIS-TESTING ACROSS ALL DOMAINS

The software used to carry out the inferential statistical analyses necessary for testing the experimental hypotheses was the open-source software application *JASP* (0.17.3).

As outlined in the prior sections, the primary outcomes pertaining to the APW paradigm were, under academic domain, test scores for maths, Maltese, English, science, overall academic and general reasoning. Under the physical domain were BMI, speed, locomotion, and ball skills, and finally, under the wellness domain satisfaction with family, friends, school, living environment, and self. This resulted in a total of 15 dependent variables as outcomes against which we aimed to test variation due to the intervention.

Descriptive statistics were compiled for each outcome, split between pre- and post-testing phases. Each outcome, therefore, was measured at two points in time, before and after the intervention. The descriptive statistics, which include the mean, median, standard deviations and standard errors, are presented below to provide a complete picture of the data

collected from the research study. Inferences can also be made directly from the 95% confidence intervals (CIs), which are also presented. These CIs represent ranges within which inferred means can be compared between groups. Overlapping CIs suggest that no statistically significant differences exist between the groups. CIs that do not overlap suggest that a significant difference may exist. For instance, a CI of 0.00 to 1.00 for the pre-test group on outcome A and a CI of 1.50 to 2.00 on outcome B would suggest a difference between the groups. In addition to presenting these basic statistics, however, more formal experimental hypothesis tests were carried out. The logic governing these tests is hereby outlined below.

For each outcome, the null hypothesis states that none of the difference between pre-test and post-test values was due to the intervention. In other words, the difference in test results from the start to the end of the year, dependent on doing PA every school day, is null. More simply, the interaction between time (pre/post) and condition (control/treatment), called b , is null, or $b = 0$. So, for each of the 15 outcomes cited above:

$$H_0: b = 0$$

To test the main experimental hypotheses, therefore, where x_1 is the time variable taking on the values 0 for the pre-test and 1 for the post-test, and x_2 is the condition variable taking on the values 0 for the control group and 1 for the treatment group, the following general linear form was used:

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_1x_2 + \epsilon$$

The parameter estimates β_n denote the change in y for every unit change in x_n . More specifically, β_3 above refers to the interaction between x_1 and x_2 , or the change in y explained simultaneously by x_1 and x_2 . Above, ϵ represents all the variation in y not explained by any of the x variables included in the model.

To test the main experimental hypotheses, therefore, F and p values were considered to check the probability of obtaining a ratio of variance explained by the interaction at least as large as that observed. The null was rejected, according to social science convention, when $p < .05$ ($\alpha < .05$). In other words, if $p < .05$, we could make the inference that the treatment effect was significant, and conclude that the evidence does not refute the experimental hypothesis.

In at least one instance, the researchers included a control variable to adjust for the effects of a third factor, say, x_3 , such that the above interpretation was repeated where:

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_1x_2 + \epsilon$$

The above logic was applied to address the main research hypotheses, as shown below in Table 6.

RESEARCH HYPOTHESIS	DOMAIN	OUTCOME	EXPERIMENTAL HYPOTHESIS
RH_1	Academic	Maltese	$H1_a$
		English	$H1_b$
		Maths	$H1_c$
		Science	$H1_d$
		Academic Overall	$H1_e$
		Reasoning	$H1_f$
RH_2	Physical	BMI	$H2_a$
		Speed	$H2_b$
		Locomotion	$H2_c$
		Ball Skills	$H2_d$
RH_3	Wellness	Family	$H3_a$
		Friends	$H3_b$
		School	$H3_c$
		Living Environment	$H3_d$
		Self	$H3_e$

Table 6 - All experimental hypotheses

Finally, to augment the statistics resulting from hypothesis testing, line graphs are presented to illustrate the changes in outcomes due to time and condition. It should be noted that the line graphs are based specifically on group means and do not portray the variance on which statistical inferences and claims of significance are ultimately made.

2.7.5 CONCLUSION

The following visual, figure 6, is intended to visually provide a clear picture of the full process of this study. The planning phase, and all its detailed parts is shown in the grey column on the left-hand side of the visual. The intervention is shown in green, while the three phases of the research study are indicated in the 3rd column. Finally, the last and fourth column demonstrate the work done to finalise this report.

PLANNING PHASE	INTERVENTION	RESEARCH PHASE	POST-RESEARCH PHASE
March 2022			
Malta FA approaching researcher			
April 2022		Phase 1	
Exploration of Research Needs		4-6th Oct 2022	
Research Group Composition		P TGMD Testing	
May - Aug 2022	10 th Oct 2022	7th - 14th Oct 2022	
FF5 Research Design		A Academic Testing	
FF5 Programme Design		W Wellness Testing	
June - Aug 2022		Oct - Nov 2022	
Development of APW Paradigm		Semi Structured Interviews with SLT, Class Teachers, LSEs, Coaches	
Literature Review		Nov - Dec 2022	
Research Tools		Focus Groups with Students, Parents/Guardians	
Aug 2022	FF5 Programme with Daily Physical Activity in 3 schools	Phase 2	
Discussing Research Design with UEFA		Jan - Apr 2023	
Aug 2022		Observations in Schools	
Call for Application for Schools		Apr 2023	
Sep 2022		Pedometer Testing	May 2023
Meeting Schools Leadership Teams		Phase 3	Blind Analysts Training
Sep 2022		June 2023	June 2023
MCAST Ethical Approval		A Academic Testing	TGMD Blind Analysis
MEYR Permission to Conduct Research Study	31 st May 2023	P TGMD Testing	Jul - Aug 2023
Sep 2022		W Wellness Testing	Quantitative Analysis
Coaches Training		Semi Structured Interviews with SLT, Class Teachers, LSEs, Coaches	Qualitative Analysis
Sep 2022		Focus Groups with Students, Parents/Guardians	Jul - Aug 2023
Parents Intro Meeting			Writing up the Report
Oct 2022			
Press Launch			

Figure 6 - Visual timeline of the FF5 programme and the FF5 Research Study



CHAPTER 3

FINDINGS



3.1 INTRODUCTION

The chapter opens with a fresh overview of the APW paradigm as a foundational interpretive framework for the analysis, given the data. The first section elaborates on participants' definitions and perceptions concerning the role of each APW domain within the research study setting. The emerging characteristics of such a setting constitute an important contextual backdrop for how the findings are to be interpreted and delimited. The chapter then explores findings pertaining to the practical implementation of the FF5 sessions. Emphasis is placed on the observed dynamics of these sessions, the role of the coaches and the relationships that evolved throughout the duration of the programme.

3.2 THE APW PARADIGM - SETTING THE SCENE

The research study's central research question sought to identify the potential benefits of daily PA within the context of the three APW domains. Within the framework of the APW paradigm, the stakeholders were asked to elaborate on how they define and understand each domain and give an overview of the programmes, initiatives and events taking place throughout the 2022-2023 scholastic year. These data were essential for comprehending the nature of initiatives that coincided with or were adjacent to, the FF5 programme. The findings showed that the domains of the APW paradigm were valued and prioritised differently by the participating stakeholders. The underlying values associated with the three main domains constituting the paradigm are hereby explored.

3.2.1 EXPLORING DOMAINS AND ROLES IN THE APW PARADIGM WITHIN EDUCATIONAL CONTEXTS

During the initial series of interviews conducted in Phase 1, stakeholders were invited to provide comprehensive definitions of each domain comprising the APW paradigm and elaborate on each domain's role within educational settings.

In the context of the academic domain, respondents, predominantly staff members including teachers and members of the SLT, invoked terminology such as “continuous assessments”, “learning outcomes”, “syllabus” and “examinations” to delineate the scope of this domain. Notably, reference to examinations was frequently made, particularly in relation to Year 4 students, for whom these assessments marked their first exposure to formal examinations within the primary school experience. As two teachers and a parent expressed:

“Year 4 is the first year where students are asked to sit for an exam ... I have a bit of an issue regarding this ... the main focus of exams is to only show how good a student is academically.” (Teacher)

“The assessment and examination grades might be seen as relevant, however, I am not sure how much these are representing whether students are ready for life.” (Teacher)

“I think that Year 4 is quite challenging ... I am aware that there are continuous assessments ... I just wish that these were more hands-on.” (Parent)

In light of this, the educators all addressed the contention that in Year 4, a good deal of academic material needs to be covered. One teacher put forth the argument that this circumstance prompts a discerning process whereby choices must be made regarding the prioritisation of certain lessons:

“The syllabus is too vast and automatically, physical education is one of the first subjects which gets thrown out of the window.” (Teacher)

Another term that continuously resurfaced throughout the academic domain is the COVID-19 pandemic. Most stakeholders elaborated on the negative connotations brought by this period and the adverse effects on the students' learning and educators' quality of teaching within the academic domain. As two of the SLT members explained:

“We believe that COVID had a negative impact on learners ... they seem to have lost the basics ... the foundational academic knowledge.” (SLT member)

“... the pandemic had its damage, all teachers are feeling overwhelmed... potentially due to COVID-19.” (SLT member)

Turning to the physical domain, stakeholders predominantly construed it in the context of PA which was defined as “an activity which takes students away from just sitting in the classroom” (SLT member) and it “involves thinking skills and not simply running around.” (another SLT member)

Educators frequently characterised this domain by emphasising “movement”, stating:

“It can be a lot of things, even if you go out of the house for a walk can be considered as physical activity, physical activity is anything which has to do with movement.” (LSE)

“When you move and you consume the energy in your body.” (Teacher)

“Physical activity, for me, is not only when you’re doing a sport – it is also about the importance of movement and to understand the body. It is a question of diet, food, the way the body is composed.” (Teacher)



Figure 7 - During one of the Fun Fit 5 sessions held in the classroom

Evidently, the definitions articulated by parents and students aligned with those of educators. Parents expressed their thoughts on PA by employing phrases such as *“movement”, “burning calories”, “it keeps you sane”, “it keeps you energetic”,* and *“anything which makes you use muscles and gets the heart pumping”*. The interviewed parents articulated their perspectives regarding the significance of PA, and the majority portrayed this domain as imperative as it allows the children to burn off their energy. In alignment with this viewpoint, parents explained that their children are enrolled in extracurricular activities which involve various forms of physical engagement. Gymnastics, obstacle course programmes and football were amongst the examples mentioned.

Similarly, the interviewed students extenuated upon different categories of activities to enhance their understanding of PA. Such examples included terminology such as *“training”, “warm up”, “races”* and *“throwing balls”*. Two students provided more extensive insights into this matter, emphasising the significance of the *“fun element”* and *“agility”* inherent in activities conducive to promoting PA. They articulated their viewpoints as follows:

“Physical activity is important because we stay active, because we have fun and we become stronger.” (Student)

“With physical activity I can run faster, lift heavier things, and have more agility and strength.” (Student)

“It (referring to physical activity) helps you with the way you move.” (Student)

In terms of the wellness domain, the participants anticipated a definition by making reference to the guidance and counselling services offered by the school and social workers, as well as PSCD lessons and other sessions given by the Nurture teacher. The students, in particular, referred to PSCD lessons. For instance, a student stated that such lessons allow for *“the space to express themselves, talk about feelings, talk about life and friends”*. One of the teachers reported that in terms of students’ well-being, it was noted that the students lacked a lot of social skills, and fortunately, the nurture class helped a lot in this aspect. Reference to addressing bullying was also considered a component of *“wellness”*. As one teacher emphasised:

“Counselling is also offered, bullying is taken very seriously and we have a bullying guidance teacher; so if there are problems we hold a session with this teacher.” (Teacher)

A number of participants underscored the inherent connections between mental well-being and other domains, such as PA. A member of the SLT emphasised this connection by stating:

“Physical activity also involves mental well-being. I think they go hand in hand, in fact, for example, during one of our CoPE sessions, we focused on mental activity and its link to physical activity.” (SLT member)

Similarly, one of the students also extenuated on this connection, arguing that:

“... being able to think quicker... movement... exercising, lifting, running.... all of this helps you with your brain too.” (Student)

Furthermore, a teacher expounded on the role of wellness, asserting that smaller schools have an advantageous position in fostering wellness due to their smaller student populations:

“Small schools have a greater chance of ensuring wellness because of the smaller number of children; indirectly, the schools will be working more on human relationships.” (Teacher)

3.2.2 MAPPING THE 2022-2023 SCHOLASTIC YEAR: PROGRAMMES, INITIATIVES, AND EVENTS OVERVIEW

Stakeholders from the three selected schools were asked to elaborate on the programmes or initiatives which took place in their respective schools. Figure 8 gives a visual representation of the programmes and initiatives mentioned by selected members of the SLT, class teachers, LSEs, parents and students. It is important to highlight that these are presented collectively, and whilst some were commonly practised in all schools, others might differ from one school to another. In addition, the diagram’s content relates to the programmes, initiatives and events provided by the participating stakeholders.

Figure 8 shows that the stakeholders could group the programmes and initiatives under simultaneous sections of the APW paradigm. Whilst some initiatives were solely related to one of the APW domains, other initiatives addressed two or all the domains of the APW paradigm. Figure 8 further extenuates that the FF5 programme instigated a collective approach whereby the APW domains were all prioritised according to the stakeholders.

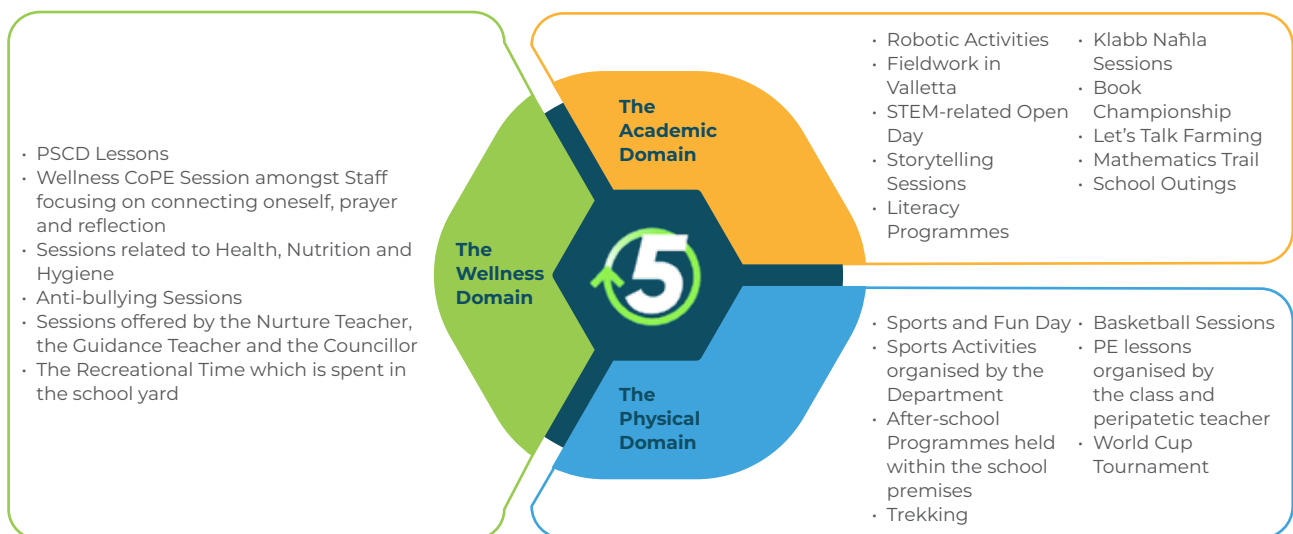


Figure 8 - A List of School Programmes, Initiatives and Events provided by Participating Stakeholders in the Research Study

When the stakeholders, namely SLT members, teachers and LSEs, were asked to elaborate on the inception and implementation of these programmes, different perspectives were evident. One of the SLT members explained that teachers were constantly approached and asked to consider approval before commencing with any school programme. Conversely, another SLT member and an LSE instigated that there were occasions when these programmes may be perceived as somewhat obligatory, while at other times, they were not. Another educator added: *“I think teachers do have mixed feelings about these programmes, there were times when they complained about them.” (LSE)*

3.2.3 VALUES AND PRIORITIES OF THE APW PARADIGM

The three domains constituting the APW paradigm cannot be understood in isolation. Prevailing data indicated that throughout both the pre-and post-interviews, reference was made to each of the domains, whilst there were instances where multiple domains were addressed collectively. Given this understanding, findings did indicate that stakeholders held varying priorities and values concerning each domain.

Most stakeholders emphasised the pre-eminence of the academic domain among the three domains. This perspective was commonly shared, driven by the prevailing belief that schools primarily exist to equip students with diverse academic skills, for example, *“I feel that within a schooling level, the academic aspect is given most importance.”* (Parent)

This sentiment was echoed by the students themselves, who asserted that *“children go to school to learn”* and *“children go to school to secure a good future job such as a fireman, ambulance driver, or any other profession”*. Furthermore, students mentioned mathematics, Maltese and English as the most important subjects taught in school, despite not necessarily being their favourites. In line with this perspective, an SLT member quantified this emphasis, stating that *“approximately 80% of the child’s schooling experiences focus on the academic domain”*.

Interestingly, another SLT member also resorted to percentages to underscore the differential prioritisation of the three domains:

“Let’s assign percentages – the academic domain is given a 90% priority whilst the physical domain is given much, much, less importance. I think these should be balanced.” (SLT member)

This prevalent perception of the academic domain overshadowing the other two was also acknowledged by coaches and teachers alike. A coach remarked, *“academics always take precedence, even among those who have passion for sports”*. Similarly, a teacher expressed:

“Academic subjects are accorded higher priority ... it is our mentality ... I do not agree with it ... but a lot of teachers I know think like this ... they still think that physical education, for example, is an extra lesson ... maybe because some teachers find it stressful and demanding ... or perhaps because they prefer the comfort of the classroom.” (Teacher)

In addition, an SLT member noted that while the academic domain prevails, this prioritisation may vary from one catchment area to another. Another SLT member also elaborated on this, stating that:

“Within a particular catchment area in Malta which is known for particular social cases, the wellbeing of students seems to be given more priority.” (SLT member)

In the same vein, another educator also stated that this might vary from government schools and other types of schools, arguing that:

“...private and church schools are more resourceful and tend to push the physical and wellbeing domains more than government schools.” (SLT member)

Another SLT member argued that the wellness domain should be accorded the highest importance and emphasised the school’s efforts to maintain a tranquil

atmosphere, ensuring that students know there is always someone available to listen. Similarly, an educator emphasised parents’ growing concern for their children’s *“happiness”* and their ability to attend school with a positive attitude (Teacher). This assertion reflected the concern of an LSE, also a parent, who stated that traditionally, as a parent, the primary emphasis had been on prioritising children’s academic attributes. However, after working with young students, she realised that their well-being and feelings are more important.

Many believed all domains should be treated equally, given their interconnected nature. A parent, for example, denoted that:

“Although the school is doing an amazing job in trying to expose the children to all domains, I believe that to achieve a good academic basis, you need to have all three.” (Parent)

Similarly, an SLT member argued, *“having physically active children also yields academically proficient children”*. A coach supported this perspective, asserting that PA should be equally prioritised with academics, whilst another coach believed that academic aspects within schools should receive less emphasis, as schools should provide a comprehensive education beyond the five core subjects.

3.3 THE FUN FIT 5 DAILY SESSIONS

3.3.1 THE PLANNING AND IMPLEMENTATION OF THE FUN FIT 5 SESSIONS

Each session lasted 45 minutes, during which the coaches focused the activities around specific competences according to the PE syllabus. After initial training, the coaches were committed to incorporating these elements and adopting a cross-curricular approach. The primary objective of these sessions was to introduce PA in an engaging and enjoyable manner, fostering student participation through a diverse range of activities, encompassing individual and group dynamics. Typically, these sessions commenced with a warm-up activity, followed by a series of structured activities, each building upon acquiring a specific skill. Each session closed off by a cooling down activity.

In Phase 3 of the research study, all stakeholders were invited to reflect upon their experiences with the implemented FF5 sessions. Presented below are selected quotations that encapsulate the perspectives of these stakeholders:

“The sessions were very important; they helped to break the children’s routine. They were highly beneficial.” (SLT member)

“The sessions were fun, empowering, integrated ... they were integrated because as a programme it focused on different sport disciplines.” (SLT member)

“The children were deeply affected when the programme came to an end.” (Teacher)

“Let’s be frank, the sessions were highly beneficial for all the children, and they truly lived up to the fun aspect indicated in the programme’s title!”
(Parent)

“The games were interesting and very interactive. I believe that the sessions were well-planned, and the activities were varied. The children I worked with adapted well ... however, I feel it would have better prepared me had I been informed in advance about the specific content and activities planned for each session.” (LSE)

“Most children were enthusiastic to join the sessions. Whenever they heard the phone ring, signalling the coach’s arrival at school, the excitement was felt, there were a few who displayed less enthusiasm, typically those less inclined toward sports.” (LSE)

The selected quotations, among others, underscore the well-structured and enjoyable nature of the sessions. The educators did, however, express the need to be informed about the content of each session in advance. Certain parents expressed interest in witnessing at least one session during the scholastic year. However, one parent noted that the class teacher had recorded and shared a session via an online video conferencing platform, a gesture warmly received by the participating parents. A similar sentiment was echoed when parents were invited to join a FF5 session during a school outing.

Due to the daily frequency of these sessions and the integration of the programme into the daily routine of the selected Year 4 classes, it was evident that a significant rapport developed between the coach and the students. This was consistently reflected in the qualitative data collected, and the subsequent section shall elaborate on its significance, particularly regarding the coach’s role.

3.3.2 THE ROLE OF THE COACH

The three coaches who conducted the FF5 sessions were all employed by the Malta FA, and while the coaches were responsible for delivering the actual sessions, classroom teachers and LSEs joined the class. There were instances where educators actively engaged in the sessions alongside the coaches; in other instances, they played more peripheral roles. The gathered data reflected the coaches’ primary employment as sports coaches rather than educators, and stakeholders expressed diverse perspectives on this matter:

“I think that PE teachers should implement such sessions because coaches are typically associated with football. Alternatively, if coaches are to conduct these sessions, they should undergo pedagogical training to become familiar with classroom management.”
(SLT member)

“A hybrid approach could be considered. For instance, if five sessions need to be implemented, four could be led by a coach and one by a teacher. As it is, teachers have a lot on their plate.” (SLT member)

“I have no issue with non-warranted individuals conducting these sessions. I understand that there are protocols and reasons for this – the fact that we have so little from our teaching pool ... there are lesser and lesser teachers every day.” (SLT member)

“The teacher could plan, and the coach could implement. We need to explore these models, not only in sports but also in other areas. I’ve seen teaching assistants abroad lead ensure classes while the teacher supervised.” (SLT member)

“I don’t think that a class teacher should lead a session like FF5, I think a coach should be there to offer support in this regard.” (Teacher)

“I think that the responsible persons need to be warranted, irrespective of who carries them out.” (Parent)

“Someone qualified in sports should conduct these sessions. They need to understand the fundamentals of sports and, most importantly, have a passion for it!” (Coach)

While most stakeholders expressed different views on whether coaches or teachers led the sessions, educators emphasised the already substantial workload placed on teachers, making it challenging to take on additional responsibilities.

Despite these considerations, the data indicated that the selected coaches successfully cultivated positive relationships with the children, receiving high praise from various stakeholders, particularly the students. Coaches were described as “dedicated” and “organised” by SLT members, and the following quotes underscored this sentiment:

“The coaches established strong bonds with the students.” (LSE)

“The children developed solid and positive relationships with the coaches.” (Teacher)

“I could use all the positive adjectives in the world to describe our coaches!” (Student)

“They (coaches) are funny and fun, sometimes they are strict, and sometimes they are not ... it depends on their mood.” (Student)

Stakeholders also commended the effective communication between the Malta FA, represented by the coaches, and the schools with an LSE, stating that:

“I appreciated the fact that they (Malta FA) send emails and most of the times they inform us of any changes well in advance.” (LSE)

The following sections will expound upon the four central themes that consistently emerged during the data analysis, with the next section focusing on the confluence of policy, curriculum, and assessment in a cross-curricular context.

3.3.3 FIELD OBSERVATIONS - GATHERED FINDINGS

The preceding sections presented findings related to the design of the FF5 sessions and the perceived roles of the coaches by the stakeholders. These findings showcased the enjoyable nature of the sessions for students and the formation of solid coach-student relationships. Several field observations were conducted within the school environment to gain deeper insights into the contextualisation of these sessions. The researchers carried out these observations using an observation proforma as a guide. After the observations, an in-depth discussion took place during a dedicated meeting, and the resultant emergent themes were congruent with the subheadings outlined in the proforma. In the subsequent sections, we elucidate the objective and interpretive data gathered and outline the researchers' collective insights.

3.3.3.1 The Instructional Methodologies Employed by the Coaches

Data from the observations revealed that the coaches exhibited positive attributes that enriched the PA sessions. Additionally, the dynamics of session implementation exhibited variability as these were, at times, implemented by one coach or two coaches simultaneously. Notably, the three coaches demonstrated distinct teaching and instructional styles that influenced their presence in the field and the course of the PA sessions. Therefore, despite the uniformity of the planned activities across the three schools, variations were discerned in how these were presented. For instance, one coach opted for more extensive instructions than the others. In another example, the concept of praise and words of motivation arose, whereby two coaches seemed more inclined towards using these strategies to encourage the students to finish their tasks. Differences in discourse styles were also evident, with football-related discourse frequently employed by at least one of the coaches.



Figure 9 - During one of the field observation sessions

3.3.3.2 Competition versus Cooperation and Time on Task

An observed concept during the PA sessions pertained to the element of competition. Particularly during the main activities, students were encouraged to engage actively and accumulate points for their respective groups, a practice that resonated positively with the students, who were enthusiastic about earning points for their teams. Most activities followed a linear progression and adopted a race-style structure, with students carrying out most of the activities in turns. The distinction between individual and collective performances of tasks is a crucial factor in planning sessions of this kind. Future programmes would benefit from clearer, explicit direction in favour of the latter. A greater emphasis on cooperative competition at the planning stage may have fostered more teamwork among students in practice, accentuating their social development skills. Such an approach also helps ensure that more students end the session feeling like winners.



Figure 10 - One of the FF5 sessions held on the school grounds

Another pertinent observation related to the concept of time on task. Keeping more students active more often represents an ever-present challenge for coaches. Clearer, more exercise/fitness-related goals underlying the programme would have helped maximise time on task and, thereby, result in more PA in the allotted time. A by-product of increased time on task naturally includes lower disengagement and unwanted side-line activity. More specific preparation of PA coaches through more focused programme objectives would likewise help maximise work-rest ratios.

Warm-up activities, meanwhile, emphasised more cooperative play and resulted in distinct group dynamics and more continuous engagement with the task at hand. The warm-up activities covered a range of disciplines and were less structured, a successful approach that met students' needs for diversified activities, promoting PA without rigid constraints. The structure of the warm-up

activities constituted a more faithful concordance with the programme objectives, at least from the MCAST Research Team's perspective. While acknowledging that maximising time on task and maintaining game elements is a nuanced skill for coaches in the context of children's PA, these observations punctuated earlier discussions about the differentiated roles of teachers and coaches, the nature of their preparation for such roles, and the employment structures in which they ultimately operate.



Figure 11 - During one of the Fun Fit 5 sessions

3.3.3.3 A Platform for Cross-curricular Integration in PA Sessions

At the inception of the FF5 programme, coaches underwent pedagogical training and were encouraged to incorporate a cross-curricular approach within their PA sessions. In this context, observations revealed instances where mathematical concepts, such as shapes, geometry, addition, and subtraction, were explored during sessions. Vocabulary related to colours and literacy references were also noted. Nevertheless, the application of these cross-curricular dimensions remained somewhat limited and could have been greatly enhanced had the programme allowed for closer collaboration between the coaches and educators.

3.3.3.4 Student Feedback

Throughout the observed periods, it was evident that students did not explicitly offer feedback on the skills explored during the PA sessions. This issue has been addressed during the initial training provided to the coaches, and it has been mutually agreed upon that this aspect should be incorporated into the activity template. This is to ensure that students can voice their opinions and share any concerns or entice upon skills that need consolidation. The observations, however, revealed that coaches did not actively prompt this feedback from students. Instead, students often expressed their reactions non-verbally. There were instances where students' non-verbals showed that they were enjoying the activities, while in other cases, they seemed to struggle to complete specific tasks. In such situations, however, the coaches took note of the acquired skills or otherwise and adjusted their approach and instructions accordingly.

Additionally, it was observed that the role of the class teacher was crucial in facilitating student feedback. There were instances where students preferred to share their thoughts and concerns with the class teacher rather than the coach. In such eventualities, when the teacher was present, the teacher took immediate action and addressed the points raised by the students. It became evident that students who were accompanied by their class teacher during the actual sessions were more willing to provide immediate feedback on the activities conducted. In one of the three schools, the class teacher actively participated in the PA sessions, motivating the students to engage in the activities and share continuous feedback with the educator.

3.4 EXPERIMENTAL FINDINGS

Below are the summary descriptive statistics for the three main outcomes of interest, namely, all measurements taken pertaining to the APW domains. Further to the descriptive statistics in each instance, hypothesis test results are given for the treatment effects on each of the 15 outcomes. All assumptions about homogeneity of variance in the data supporting the hypothesis tests are given in Tables 20 and 27.

3.4.1 ACADEMIC

Below (Table 7) are the results of the Maltese test both before and after the intervention. The maximum grade in both instances was five. Taking a midpoint of 2.5 as the “pass” mark, the means and CIs indicate, with the exception of the pre-test treatment group, a general tendency to pass. In this sense, the treatment group managed to improve from a generally failing standard to a passing, representing an important degree of improvement.

	MALTESE PRE-TEST		MALTESE POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	41	39	41
Missing	5	3	4	3
Median	3.000	2.000	3.000	2.000
Mean	3.105	2.098	3.205	2.537
Std. Error of Mean	0.241	0.249	0.202	0.185
95% CI Mean Upper	3.577	2.585	3.601	2.899
95% CI Mean Lower	2.633	1.610	2.810	2.174
Std. Deviation	1.485	1.594	1.260	1.185
Minimum	0.000	0.000	0.000	0.000
Maximum	5.000	5.000	5.000	5.000

Table 7 - Descriptive statistics for Maltese tests

Yet, improvement was also made in the control group, as is evident in Figure 12. Therefore, the improvement attributable specifically to being in the control or treatment group was not significant. This supports previous findings indicating a lack of effect of physical activity on academic performance in older students in Maltese higher education (Magro, Kerr-Cumbo & Zarb, 2022).

As outlined in the methodology section, this interaction between time and condition, b , would have some significant value different from 0. The null hypothesis states no effect of the interaction term, or in other words, that b is zero ($b = 0.34, F = 0.59, p = .44$). While $b = 0.34$, the p value is greater than .05, which indicates that we cannot generalise from the data that, with at least 95% confidence, b is not zero. In other words, it is more likely that b is close to null, and therefore, a significant treatment effect cannot be inferred from the data. The same logic described here is applied to all the remaining 14 experimental hypotheses.

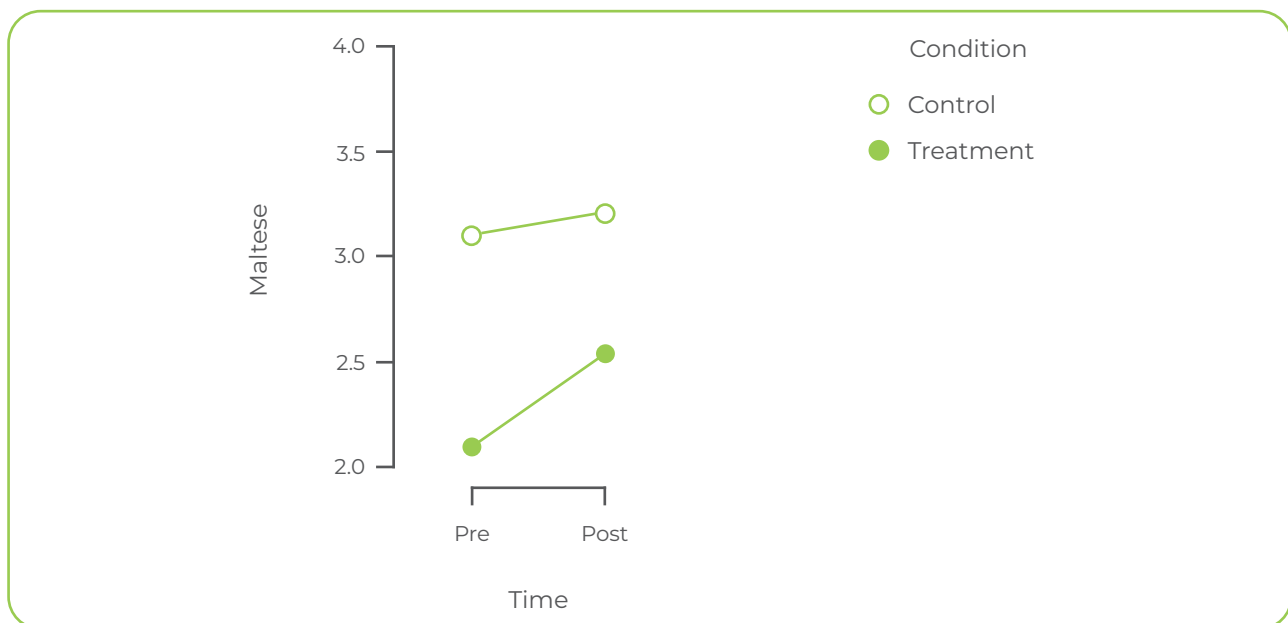


Figure 12 - Line graph for Maltese by time and condition

The means and CIs for English does not place any group, at any point in time, below passing standard.

	ENGLISH PRE-TEST		ENGLISH POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	41	39	41
Missing	5	3	4	3
Median	4.000	3.000	3.000	3.000
Mean	3.447	3.268	3.256	3.000
Std. Error of Mean	0.191	0.195	0.167	0.178
95% CI Mean Upper	3.822	3.650	3.584	3.349
95% CI Mean Lower	3.073	2.887	2.929	2.651
Std. Deviation	1.179	1.245	1.044	1.140
Minimum	0.000	0.000	1.000	1.000
Maximum	5.000	5.000	5.000	5.000

Table 8 - Descriptive statistics for English tests

It was surprising to note that both groups appeared to decline in their performance in the English test. The difference in performance from the start to the end of the year, however, was not in any way affected by the treatment ($b = -0.08$, $F = 0.04$, $p = .83$).

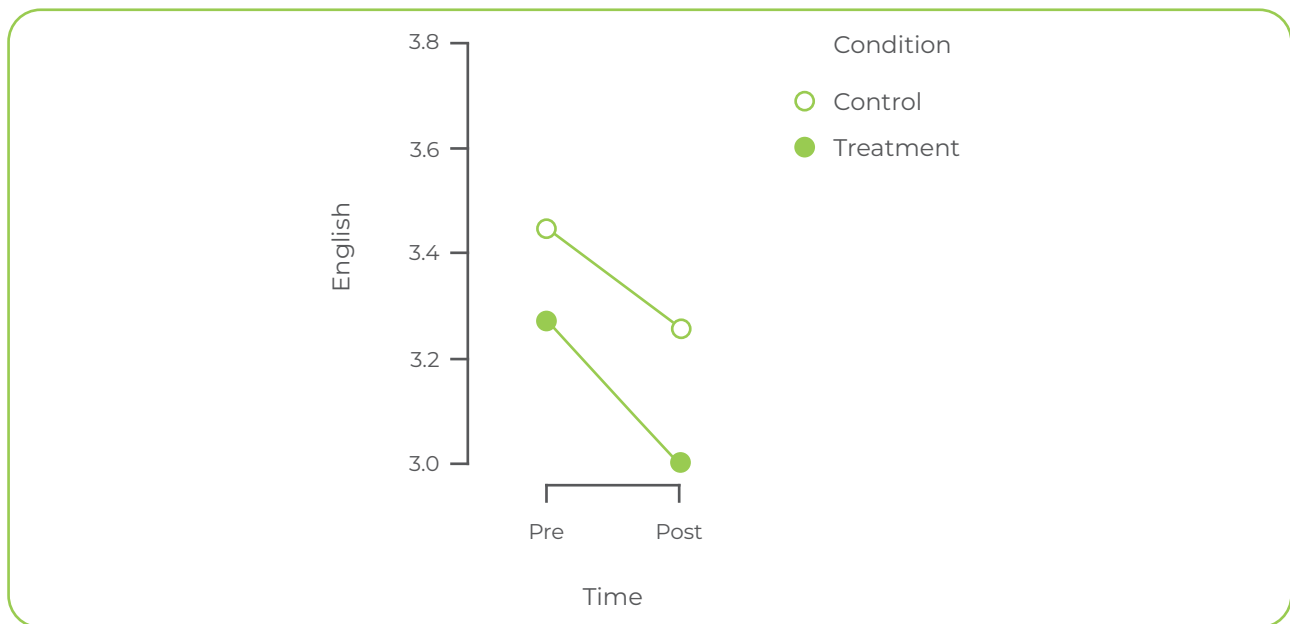


Figure 13 - Line graph for English by time and condition

Maths results were also positive overall. And performance appeared to improve in both groups throughout the year.

	MATHS PRE-TEST		MATHS POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	41	39	41
Missing	5	3	4	3
Median	3.000	3.000	4.000	4.000
Mean	3.105	2.854	4.000	3.805
Std. Error of Mean	0.232	0.253	0.160	0.195
95% CI Mean Upper	3.560	3.350	4.314	4.187
95% CI Mean Lower	2.651	2.357	3.686	3.422
Std. Deviation	1.429	1.621	1.000	1.249
Minimum	0.000	0.000	1.000	0.000
Maximum	5.000	5.000	5.000	5.000

Table 9 - Descriptive statistics for Maths test

The improvements in Maths performance throughout the year, however, occurred independently of any treatment effects ($b = 0.06$, $F = 0.02$, $p = .90$).

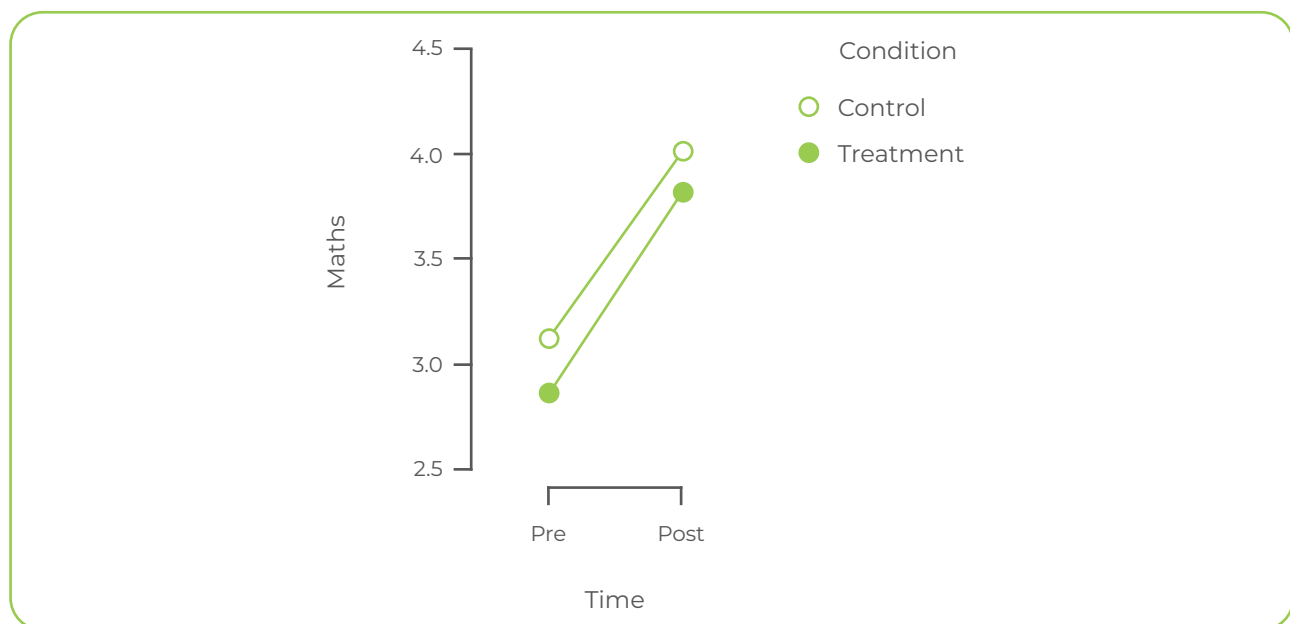


Figure 14 - Line graph for Maths by time and condition

Performance in science was similar to that in maths, as shown in Table 10 and Figure 15. Again, the treatment effect was not significant ($b = 0.11$, $F = 0.08$, $p = .78$).

	SCIENCE PRE-TEST		SCIENCE POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	41	39	41
Missing	5	3	4	3
Median	4.000	3.000	4.000	4.000
Mean	3.526	3.146	4.051	3.780
Std. Error of Mean	0.202	0.214	0.187	0.169
95% CI Mean Upper	3.923	3.566	4.418	4.112
95% CI Mean Lower	3.130	2.727	3.685	3.449
Std. Deviation	1.246	1.370	1.169	1.084
Minimum	0.000	0.000	0.000	1.000
Maximum	5.000	5.000	5.000	5.000

Table 10 - Descriptive statistics for science test

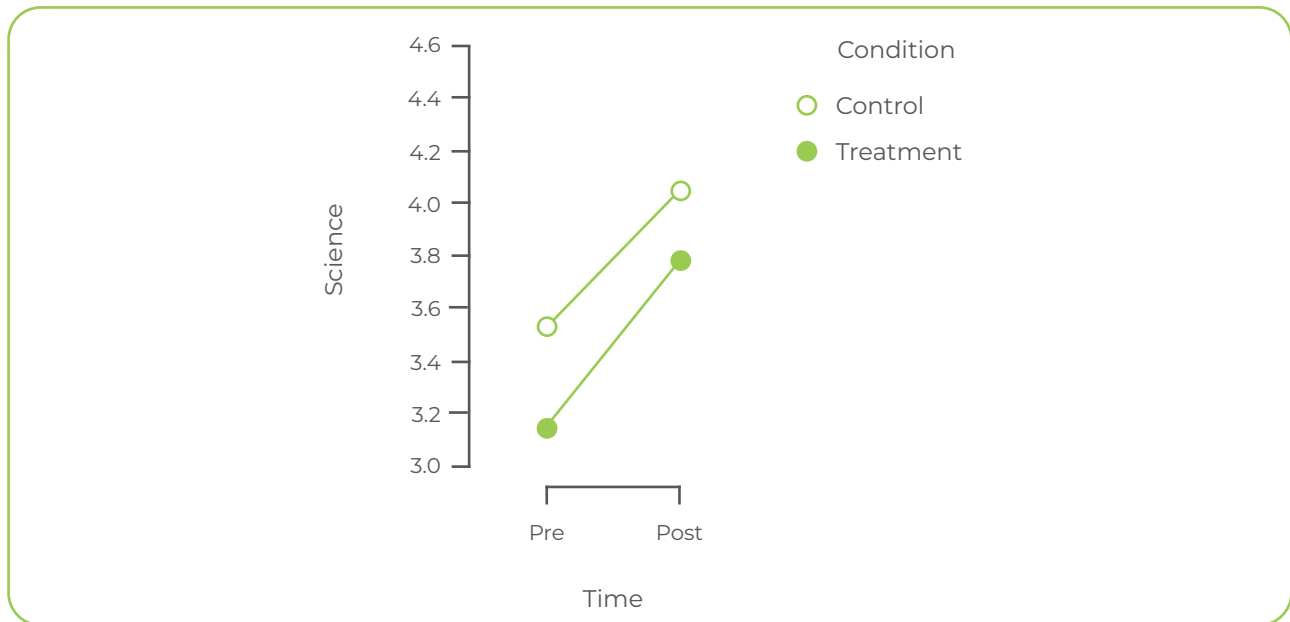


Figure 15 - Line graph for Science by time and condition

A survey of the descriptive statistics for the scores overall indicates that, in general, the students were above the pass mark for the core academic subjects overall. While the control group appeared to be of a higher standard in terms of their performance at the baseline level, independently of any intervention. Still, this difference is not beyond the realms of random chance, according to the overlapping CIs below.

	ACADEMIC TOTAL PRE-TEST		ACADEMIC TOTAL POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	41	39	41
Missing	5	3	4	3
Median	3.250	3.000	3.750	3.250
Mean	3.296	2.841	3.628	3.280
Std. Error of Mean	0.135	0.170	0.122	0.108
95% CI Mean Upper	3.561	3.174	3.867	3.493
95% CI Mean Lower	3.031	2.508	3.389	3.068
Std. Deviation	0.834	1.088	0.761	0.694
Minimum	1.500	0.000	2.000	1.750
Maximum	4.750	4.500	5.000	4.500

Table 11 - Descriptive statistics for academic (total)

Figure 16 illustrates some degree of improvement throughout the year in academic performance, albeit at virtually the same rates for those students in the control and treatment groups ($b = 0.11$, $F = 0.15$, $p = .70$).

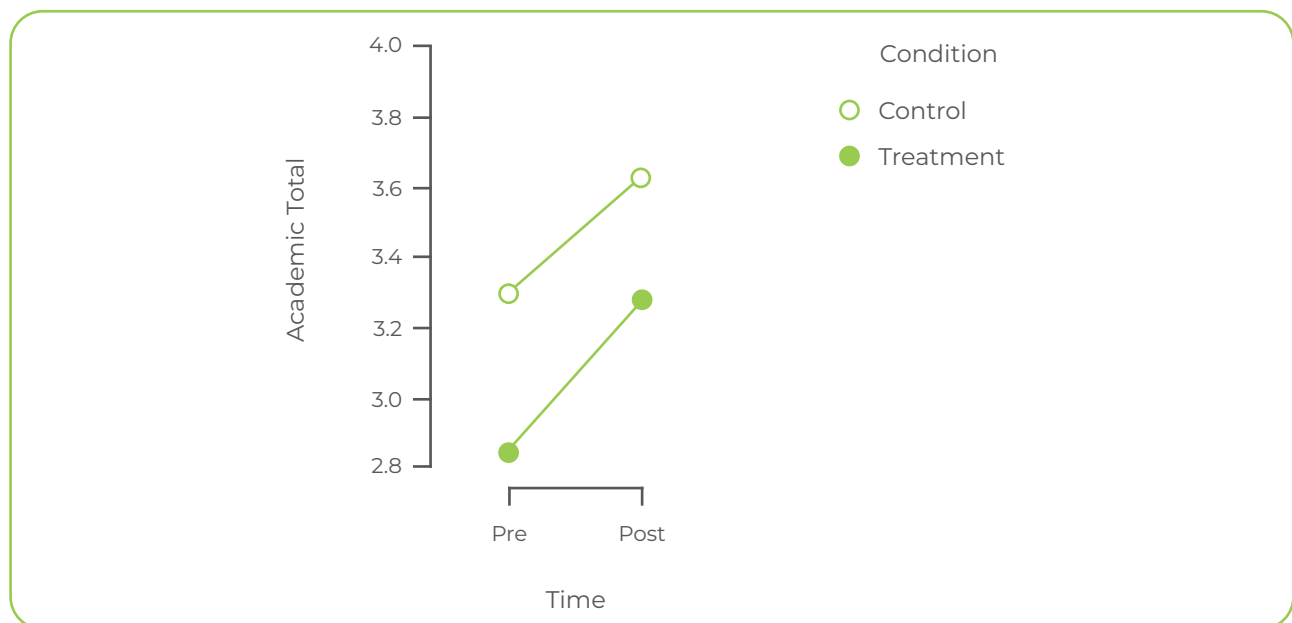


Figure 16 - Line graph for academic (total) by time and condition

And finally, in the academic domain, a general reasoning test was designed as a cognitive outcome independent of the formal core subjects. It was interesting to note that according to the CIs below (Table 12), students were far more capable in the reasoning test at the end of the year.

	REASONING PRE-TEST		REASONING POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	41	39	41
Missing	5	3	4	3
Median	2.000	2.000	4.000	3.000
Mean	1.974	1.561	3.821	3.415
Std. Error of Mean	0.148	0.156	0.168	0.171
95% CI Mean Upper	2.265	1.867	4.149	3.750
95% CI Mean Lower	1.683	1.255	3.492	3.079
Std. Deviation	0.915	1.001	1.048	1.095
Minimum	0.000	0.000	1.000	1.000
Maximum	3.000	4.000	5.000	5.000

Table 12 - Descriptive statistics for reasoning test

As was the case with all other academic outcomes, however, the improvement occurred independently of any treatment effects ($b = 0.01$, $F < 0.01$, $p = .98$)

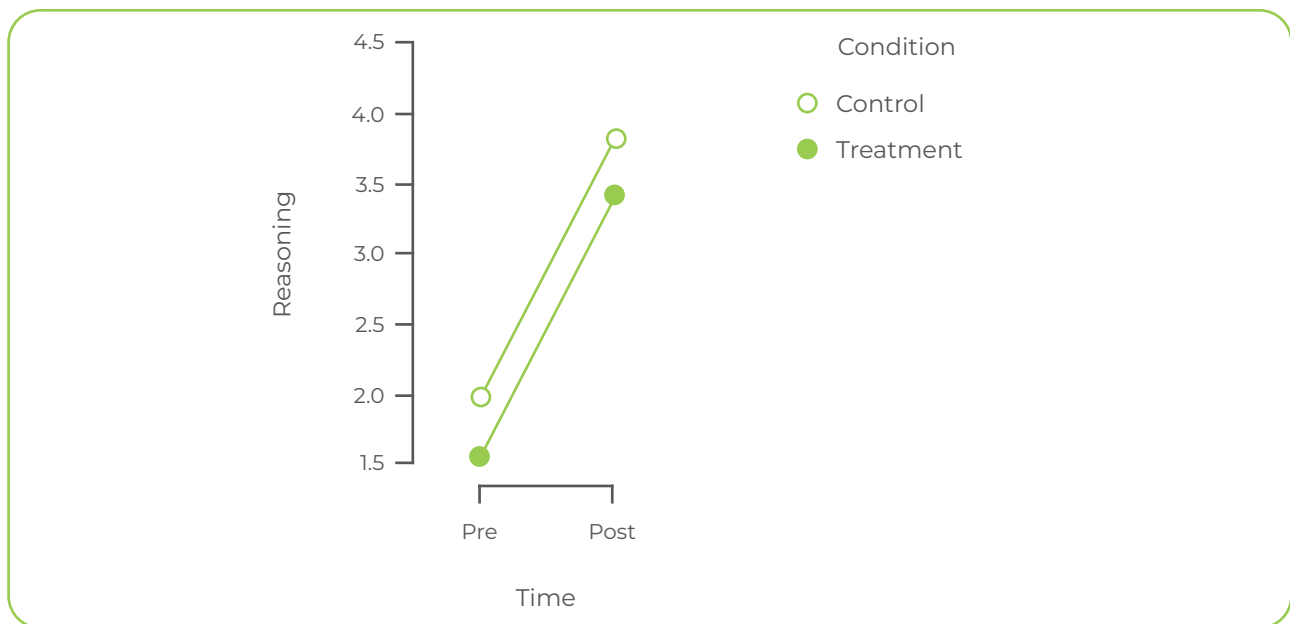


Figure 17 - Line graph for reasoning by time and condition

Taking all the academic outcomes cumulatively, it is clear that taking part in a PA intervention daily did not improve academic outcomes, nor did it adversely affect them. In other words, doing PA sessions daily in schools did not have any impact on academic outcomes whatsoever.

3.4.2 PHYSICAL

BMI was chosen as the main anthropometric measure since it defines a healthy weight range in terms of kg/m² between 18 and 24. A BMI of 30kg/m² or more is considered as an indicator of obese status. Grech et al. (2017) and Aquilina et al. (2019) have estimated the proportion of obese Maltese children aged 8 to 17) at approximately 40%. Table 13 shows the mean values for BMI in the sample. Combined with the 95% confidence intervals, the data indicate a generally low, healthy average BMI in the sample, with less than 5% of participants categorised as obese in both the pre-test and post-test phases.

	BMI PRE-TEST		BMI POST-TEST	
	Control	Treatment	Control	Treatment
Valid	40	42	40	42
Missing	3	2	3	2
Median	16.435	16.785	16.765	18.259
Mean	17.639	18.743	18.718	19.081
Std. Error of Mean	0.760	0.724	0.820	0.709
95% CI Mean Upper	19.129	20.162	20.325	20.470
95% CI Mean Lower	16.149	17.324	17.111	17.692
Std. Deviation	4.807	4.693	5.186	4.593
Minimum	12.460	13.690	12.920	13.627
Maximum	34.050	33.430	34.387	35.278

Table 13 - Descriptive statistics for all BMI measurements

The low proportion of obese participants implies either a sample that is not representative of the broader population of Maltese Year 4 primary school students or that obesity rates may be in decline. Further research is needed to ascertain which of these possibilities is more likely.

Figure 18 gives a visual representation of the BMI mean values across time (pre-test and post-test) and condition (treatment of control group). While the increase in BMI was less pronounced in the treatment group over time (+0.34) than in the control group (+1.08), this effect was not significant when taking into account an analysis of variance in BMI measurements due to the interaction between time and condition. The evidence was not sufficient to reject the null hypothesis ($b = -0.72$, $F = 0.24$, $p = .62$), so we cannot infer that b was not zero, or in other words, that there was any significant effect of the treatment. The remainder of the experimental hypotheses pertaining to the effects of the treatment of daily PA sessions are presented using the same logic throughout the rest of this findings section.

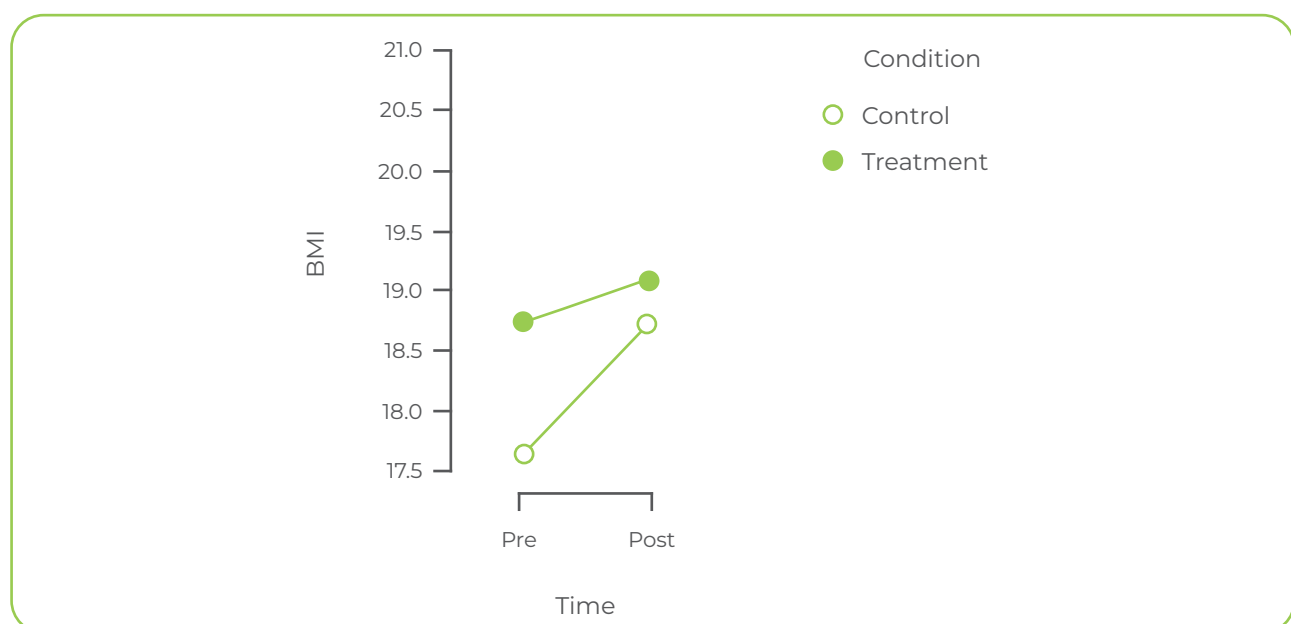


Figure 18 - Line graph for BMI by condition and time

The 18.3m sprint was taken as a performance-based measure in the physical domain. In a study of Italian school children aged between 8 and 12 years, Milanese et al. (2010) reported average results between 4.42secs and 5.42secs using a stopwatch. Tambalis et al. (2013) reported an average result of 5.90secs among a large sample of Greek school children aged ten years from a standing start with unspecified timing equipment. Notwithstanding a likely faster start permitted by the use of electronic speed gates and a dynamic start in the present study, the results of Maltese children compare unfavourably, given the latter studies involved a longer distance of 30m.

	SPEED PRE-TEST		SPEED POST-TEST	
	Control	Treatment	Control	Treatment
Valid	41	42	34	39
Missing	2	2	9	5
Median	4.240	4.330	3.990	4.160
Mean	4.290	4.500	4.089	4.209
Std. Error of Mean	0.062	0.090	0.063	0.055
95% CI Mean Upper	4.411	4.677	4.211	4.317
95% CI Mean Lower	4.168	4.323	3.966	4.101
Std. Deviation	0.398	0.585	0.365	0.344
Minimum	3.590	3.640	3.480	3.510
Maximum	5.990	7.000	5.450	4.950

Table 14 - Descriptive statistics for 18.3m sprint times

Depicted visually below in Figure 19, a slightly greater reduction in time is visible with respect to the treatment group, although the treatment effect according to the time*condition interaction term according to the inferential statistical model was not statistically significant ($b = -0.09$, $F = 0.41$, $p = .53$). The evidence was not sufficient to infer a treatment effect (b) greater than zero.

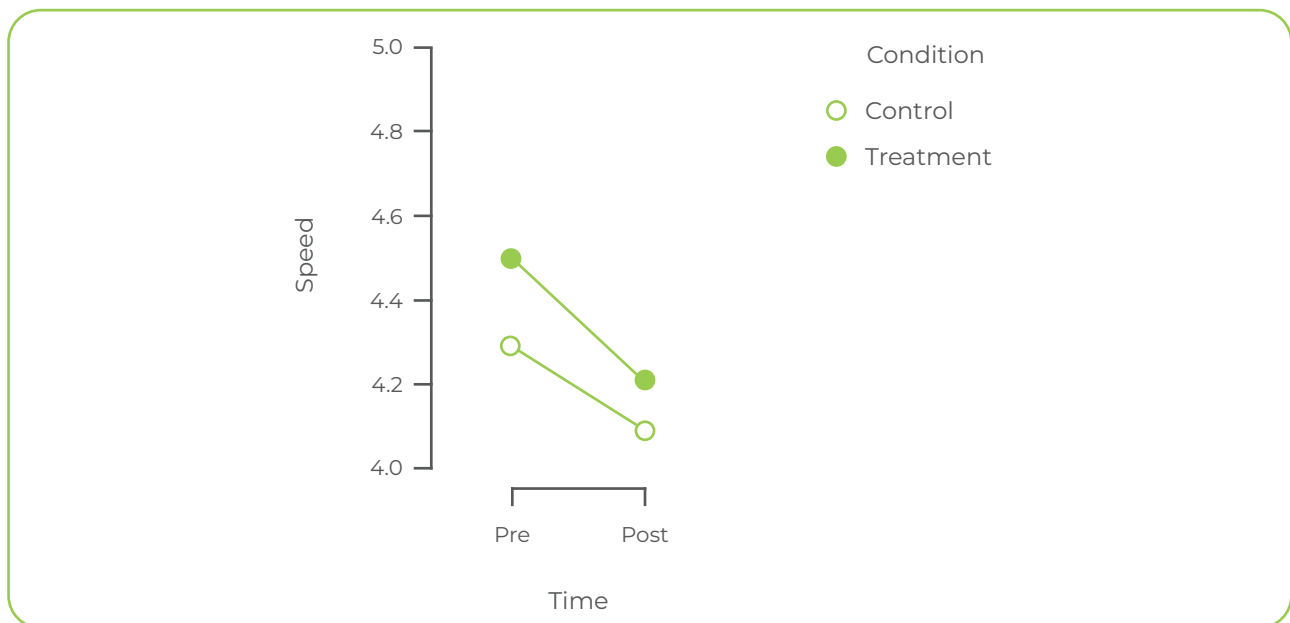


Figure 19 - Line graph for speed by condition and time

The remaining outcomes in the physical domain pertained to skill performance as judged by a team of blind analysts using checklists according to TGMD-3 protocols. These were split into two main dependent variables, each as an aggregate of multiple skills, namely, locomotion and ball skills. Locomotion was measured as a combined score including running, galloping, hopping, skipping, jumping and sliding, with a maximum possible average score of 5.

	LOCOMOTION PRE-TEST		LOCOMOTION POST-TEST	
	Control	Treatment	Control	Treatment
Valid	41	42	33	40
Missing	2	2	10	4
Median	2.833	2.667	2.833	2.833
Mean	2.786	2.600	2.858	2.696
Std. Error of Mean	0.064	0.066	0.076	0.075
95% CI Mean Upper	2.911	2.729	3.007	2.844
95% CI Mean Lower	2.662	2.471	2.708	2.548
Std. Deviation	0.407	0.425	0.439	0.477
Minimum	1.667	1.333	1.167	1.500
Maximum	3.500	3.333	3.500	3.333

Table 15 - Descriptive statistics for average locomotion scores

The use of video analysts blinded to the pre-test and post-test status of each performance ensured that no bias could influence the interpretation of the quality of skill performance and any prospective improvements attributable to the daily PA programme. According to the means reported in Table 15, the control group increased by 0.07, while the treatment group registered an improvement of 0.10, as shown visually below in Figure 20. The relative difference in improvement, however, was not statistically significant, and the evidence was not sufficient to reject the possibility of no effect ($b = 0.02$, $F = 0.03$, $p = .86$).

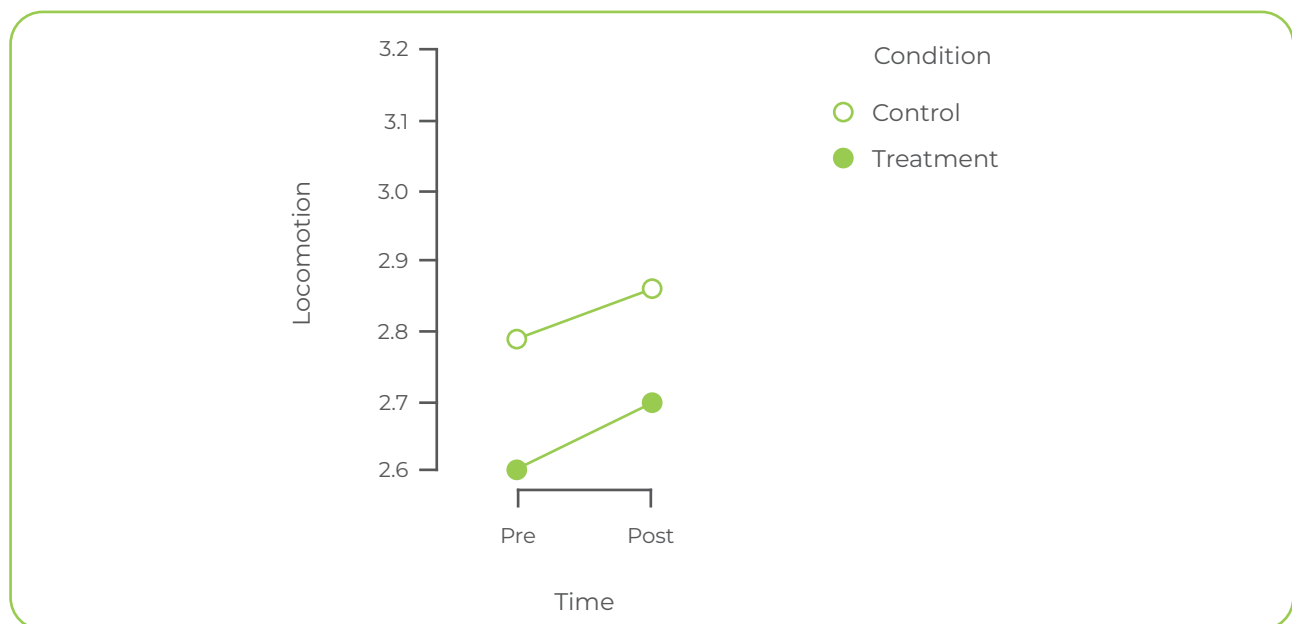


Figure 20 - Line graph for locomotion by time and condition

Ball skills consisted of two-handed throwing and catching, single-handed throwing, and striking a ball with both a bat and a tennis racket. The mean scores show a slight, albeit not statistically significant, decrease of 0.09 in the control group and 0.11 in the treatment group.

	BALL SKILLS PRE-TEST		BALL SKILLS POST-TEST	
	Control	Treatment	Control	Treatment
Valid	41	42	33	40
Missing	2	2	10	4
Median	2.429	2.429	2.429	2.214
Mean	2.376	2.349	2.291	2.239
Std. Error of Mean	0.079	0.081	0.090	0.074
95% CI Mean Upper	2.531	2.508	2.469	2.384
95% CI Mean Lower	2.221	2.189	2.114	2.094
Std. Deviation	0.507	0.527	0.519	0.468
Minimum	1.000	1.429	1.286	1.000
Maximum	3.143	3.571	3.286	3.143

Table 16 - Descriptive statistics for ball skills

Figure 21 below shows the drops visually. As was the case with the previous experimental hypotheses, the changes were not statistically significant ($b = -0.03$, $F = 0.02$, $p = .88$). In other words, in all physical skills, the evidence was not sufficient to imply that the treatment had a systematic effect on improving gross motor skills in the treatment group, to any greater degree than the control group.

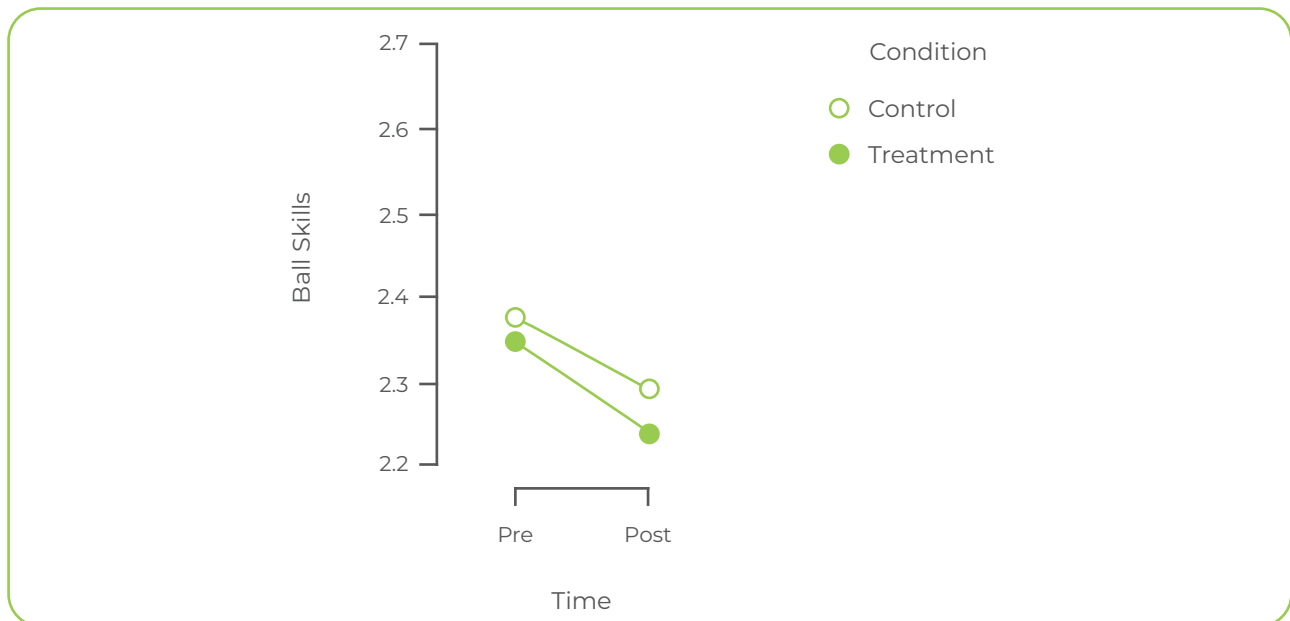


Figure 21 - Line graph for ball skills by condition and time

In a meta-analysis of the effects of functional movement skills interventions in various age groups of children across the five studies fitting their inclusion criteria, Logan et al. (2012) reported significant effects and average Cohen's d effect sizes of 0.45 for locomotion and 0.41 for object control, indicating a small to medium effect of movement skills interventions. The effect size for free-play control groups in the studies they analysed was minimal and not statistically significant, suggesting that structured interventions generally yield noticeable improvements in gross motor skills in children. In the present research study, however, the control group did not engage merely in free play but carried on their normal routine, which included skill development by means of normal PE lessons. Nevertheless, both conditions failed to yield sufficient evidence indicating improvement in the present study. In a meta-analysis of 15 randomized controlled trials, Wick et al. (2017) similarly reported significant small to medium-sized effects of gross motor skill interventions in children. Their studies, however, were limited to preschoolers. They also urged caution in interpreting the results, challenging the quality of the evidence, and inferring strong effects. Following our own analysis and use of blind analysts, we concur with such caution in studies of interventions any less than a year in duration and not using analysts blinded to pre- and post-conditions.

3.4.2.1 Study of pedometry

A sample of 10 boys and 8 girls across all three schools were randomly selected to wear pedometers for five consecutive days in April. Steps were logged at the start and end of each school day, allowing an analysis of steps taken throughout the school day, steps taken outside of school, and total overall steps taken throughout the day. The descriptive statistics for all three outcomes are presented in Table 17. The number of students in each group reporting doing additional sport or PA in their own time is reported below in Table 18.

FREQUENCIES FOR ADDITIONAL SPORT					
CONDITION	ADDITIONAL SPORT	FREQUENCY	PER CENT	VALID PERCENT	CUMULATIVE PERCENT
Control	No	2	28.571	28.571	28.571
	Yes	5	71.429	71.429	100.000
	Missing	0	0.000		
	Total	7	100.000		
Treatment	No	6	54.545	54.545	54.545
	Yes	5	45.455	45.455	100.000
	Missing	0	0.000		
	Total	11	100.000		

Table 17 - Frequencies for additional sport and PA performance, including frequency of weekly sessions

	AVERAGE DAILY STEPS		AVERAGE SCHOOL STEPS		AVERAGE OTHER STEPS	
	Control	Treatment	Control	Treatment	Control	Treatment
Valid	7	11	7	11	7	11
Missing	0	0	0	0	0	0
Median	10816.600	10731.200	3563.600	5602.200	7092.600	4742.000
Mean	13126.571	11338.491	4238.771	5836.018	8887.800	5502.473
95% CI Mean Upper	16416.254	13248.457	5606.962	6629.220	11771.530	6979.107
95% CI Mean Lower	9836.889	9428.524	2870.581	5042.817	6004.070	4025.838
Std. Deviation	4440.735	3232.020	1846.917	1342.245	3892.741	2498.741
Minimum	8559.200	6314.600	2465.600	4043.600	5794.800	1560.400
Maximum	21485.400	17802.600	7883.200	8497.600	17170.200	9305.000

Table 18 - Descriptive statistics for all three pedometry outcomes

According to the means reported above, during school hours, students in the treatment group took, on average, 1597 steps more per day than the control group. Outside of school hours, they took 3385 less, while overall, they took 1788 less. Figure 22 shows the difference in steps between the treatment and control groups exclusively for steps taken during school hours.

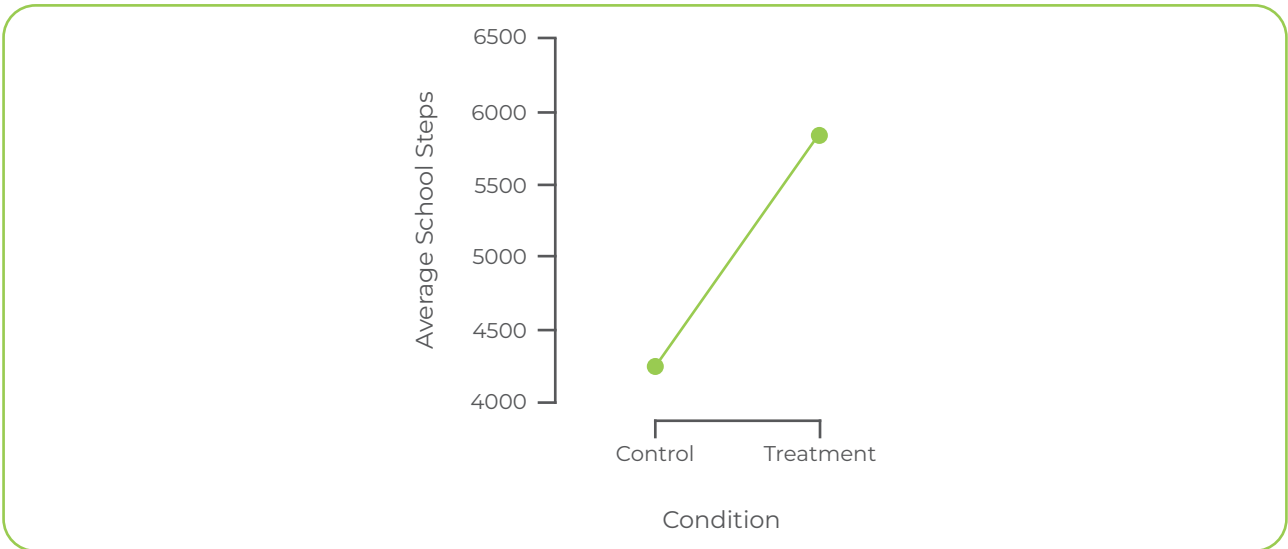


Figure 22 - Line graph for steps at school by condition

The difference in steps performed strictly during school hours between the treatment and control groups was statistically significant ($b = 1597.25$, $F = 4.54$, $p = .049$). In other words, the evidence supports the hypothesis that a daily PA programme increases daily activity in terms of step counts, at least during school hours. An average of 5,215 steps were taken during school hours, accounting for 43% of the total average daily steps. In a systematic review of 31 pedometer-based studies worldwide, Tudor-Locke et al. (2009) reported that 42-48% of total steps occurred at school in the case of boys and 41-47% for girls. Broken down by condition, 4,239 steps were taken on average by Maltese children in the control group and 5,836 by those in the treatment group, representing 35% and 48% of total steps, respectively. A daily PA programme, therefore, essentially makes the difference between Maltese state primary schools (at least in Year 4), falling below international conventions (41 to 48%) in the case of the control group, as opposed to world-leading status in the case of the treatment group.

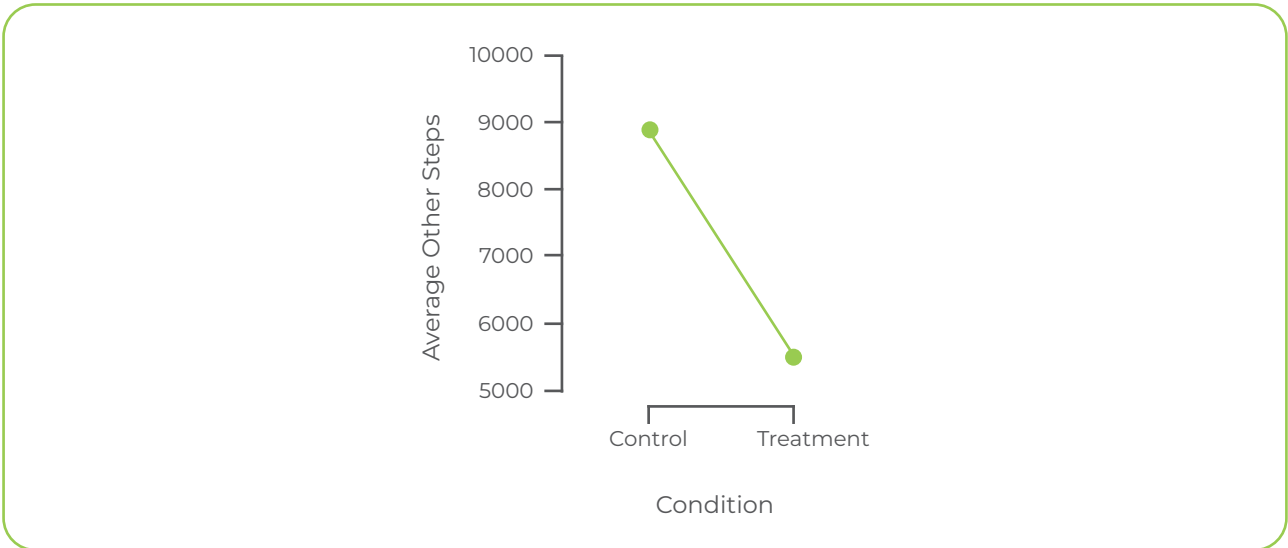


Figure 23 - Line graph for steps outside school hours by condition

Steps taken outside school hours are represented in Figure 23, showing a drop in steps taken by the treatment group. The difference was statistically significant ($b = -3385.38$, $F = 5.12$, $p = .04$). Taken at face value, the findings suggest that while students in the treatment group performed more steps during school hours, they compensated by taking less after school. To explore this more deeply, a post hoc analysis was carried out to account for the additional effect of performing structured sport or PA. The binary variable denoting whether or not students performed additional sport or PA was included in the regression model as a control variable alongside the treatment effect. Table 19 shows that when taking this new information into account and holding a constant propensity to engage in additional sport or PA, the treatment effect was no longer significant ($b = -2933.41$, $t = -1.92$, $p = .08$). In other words, when controlling for additional sport or PA, we can no longer make the claim that students in the treatment group systematically performed less steps after school hours.

COEFFICIENTS

MODEL		UNSTANDARDIZED	STANDARD ERROR	STANDARDIZED ^a	t	P
H ₀	(Intercept)	6818.989	813.254		8.385	< .001
H ₁	(Intercept)	7645.034	1578.902		4.842	< .001
	Condition (Treatment)	-2933.412	1531.760		-1.915	0.075
	AdditionalSport (Yes)	1739.872	1502.765		1.158	0.265

Table 19 - Updated model including performance of additional sport or PA

Finally, Figure 24 illustrates the drop in steps in the total average daily steps in the treatment group. However, this difference from the control group was not statistically significant ($b = -1788.08, F = 0.98, p = .34$).

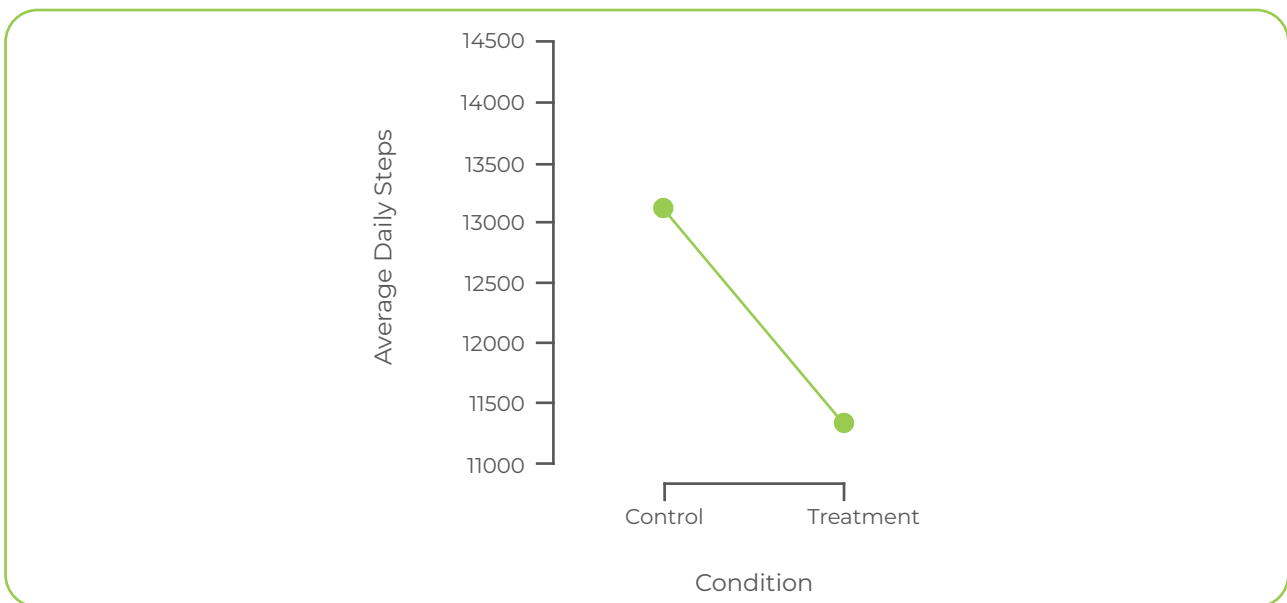


Figure 24 - Line graph for overall average daily steps by condition

Assumptions about the homogeneity of variance surrounding the above hypothesis tests are given in Table 20.

TEST FOR EQUALITY OF VARIANCES (LEVENE'S)

H	F	DF1	DF2	p
H ₁	0.350	3.000	160.000	0.789
H ₂	0.466	1.000	16.000	0.505
H ₃	1.206	1.000	16.000	0.288

Table 20 - Homogeneity of variance assumption

3.4.3 PSYCHOLOGICAL WELLNESS

The MSLSS comprises 47 items measuring psychological wellness, divided into five subdomains covering attitudes towards friends, family, school, living environment and self.

	FAMILY PRE-TEST		FAMILY POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	38	42	41
Missing	5	6	1	3
Median	5.430	5.570	5.570	5.290
Mean	5.425	5.230	5.422	5.073
Std. Error of Mean	0.078	0.163	0.113	0.143
95% CI Mean Upper	5.577	5.549	5.643	5.354
95% CI Mean Lower	5.272	4.911	5.200	4.793
Std. Deviation	0.480	1.003	0.733	0.918
Minimum	4.140	1.430	2.570	2.290
Maximum	6.000	6.000	6.000	6.000

Table 21 - Descriptive statistics for satisfaction with family

The control group maintained almost identical in the family domain, while the treatment group registered a reduction of 0.16 in their mean score, although this was not a statistically significant effect. The experimental hypothesis that daily PA improved psychological wellness pertaining to satisfaction with family life was not supported by the evidence ($b = -0.15$, $F = 0.36$, $p = .55$).

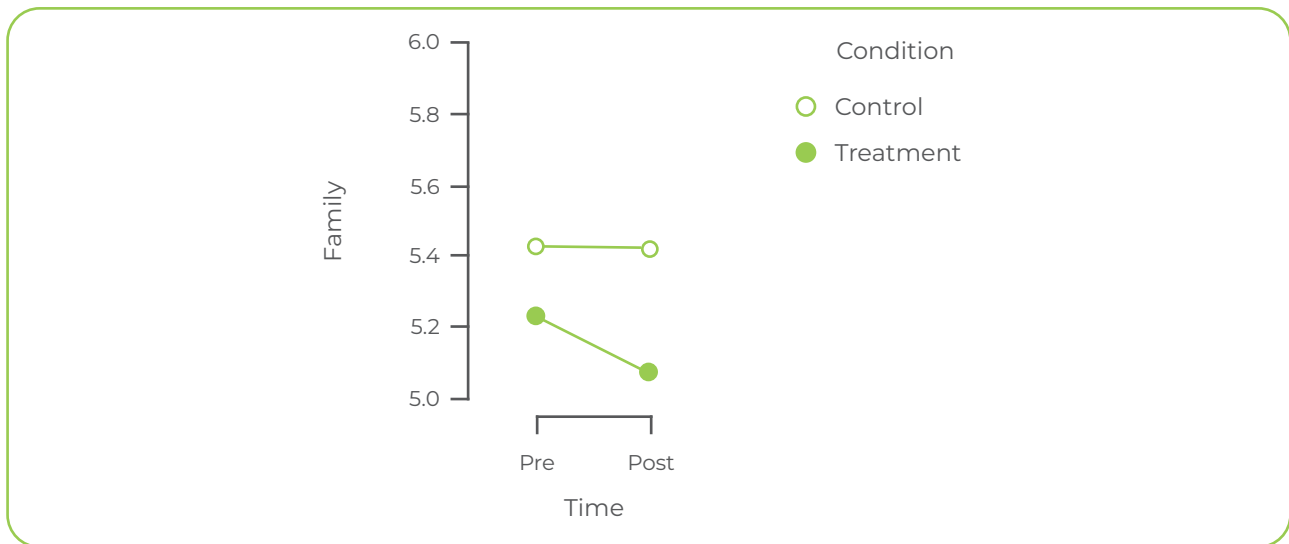


Figure 25 - Line graph for the family domain by time and condition

A similar pattern emerged in the friends domain. Table 22 and Figure 26 portray statistically insignificant decreases in satisfaction with friends in the treatment group ($b = -0.43, F = 3.56, p = .06$).

	FRIENDS PRE-TEST		FRIENDS POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	38	42	41
Missing	5	6	1	3
Median	5.385	5.440	5.440	5.220
Mean	5.213	5.271	5.368	4.992
Std. Error of Mean	0.098	0.123	0.088	0.142
95% CI Mean Upper	5.406	5.511	5.541	5.269
95% CI Mean Lower	5.021	5.030	5.195	4.714
Std. Deviation	0.605	0.757	0.572	0.907
Minimum	3.670	2.890	3.440	2.111
Maximum	6.000	6.000	6.000	6.000

Table 22 - Descriptive statistics for satisfaction with friends

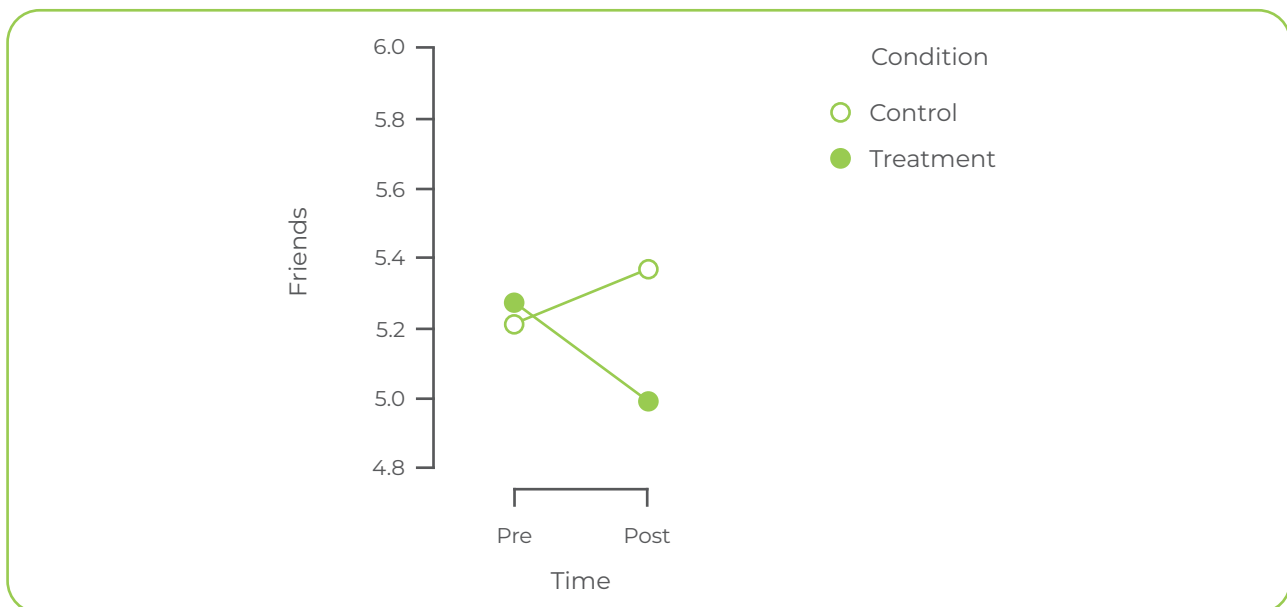


Figure 26 - Line graph for the friends domain by time and condition

A slight, albeit statistically insignificant, decrease in satisfaction with school was also noted in the treatment group ($b = -0.60, F = 3.32, p = .07$).

	SCHOOL PRE-TEST		SCHOOL POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	38	42	41
Missing	5	6	1	3
Median	5.315	5.500	5.380	4.875
Mean	5.068	5.011	5.287	4.626
Std. Error of Mean	0.152	0.200	0.106	0.193
95% CI Mean Upper	5.365	5.404	5.495	5.003
95% CI Mean Lower	4.771	4.618	5.079	4.249
Std. Deviation	0.934	1.235	0.687	1.233
Minimum	2.880	1.250	2.750	1.500
Maximum	6.000	6.000	6.000	6.000

Table 23 - Descriptive statistics for satisfaction with school

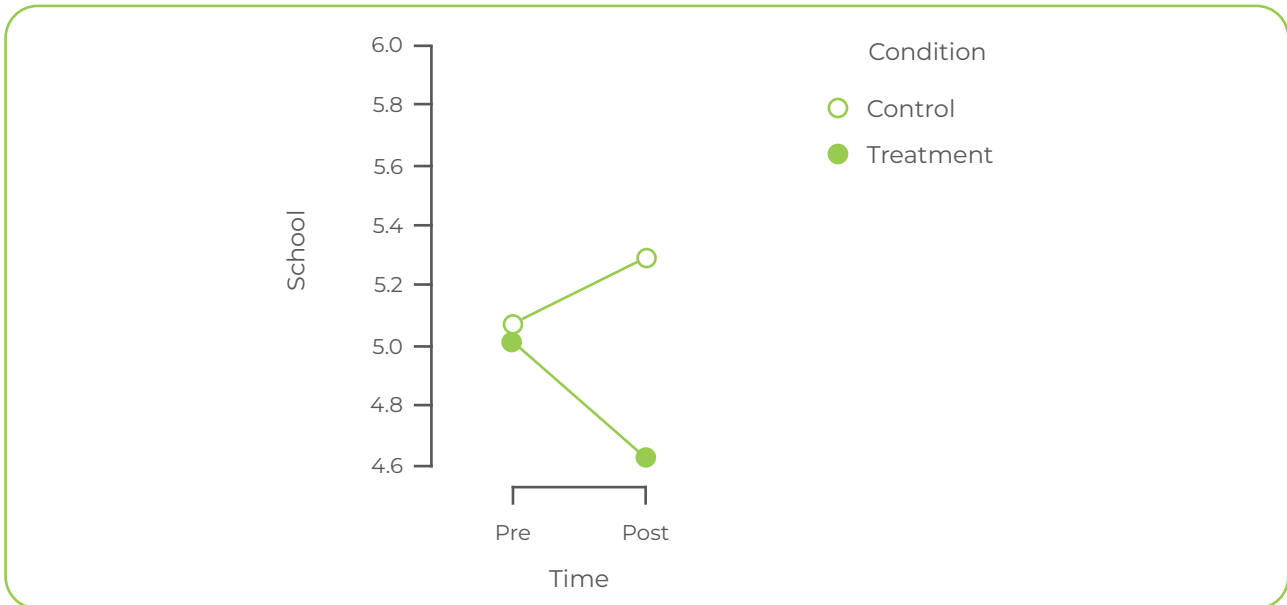


Figure 27 - Line graph for the school domain by time and condition

Satisfaction with the living environment/ neighbourhood was also subject to a small but statistically insignificant decrease in the treatment group ($b = -0.25, F = 0.71, p = .40$).

	LIVING ENVIRONMENT PRE-TEST		LIVING ENVIRONMENT POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	38	42	41
Missing	5	6	1	3
Median	5.440	5.275	5.440	5.110
Mean	5.141	4.941	5.231	4.786
Std. Error of Mean	0.142	0.147	0.118	0.171
95% CI Mean Upper	5.420	5.230	5.462	5.122
95% CI Mean Lower	4.862	4.653	5.000	4.450
Std. Deviation	0.878	0.907	0.765	1.097
Minimum	2.440	2.670	2.780	2.440
Maximum	6.250	6.000	6.000	6.000

Table 24 - Descriptive statistics for satisfaction with the living environment

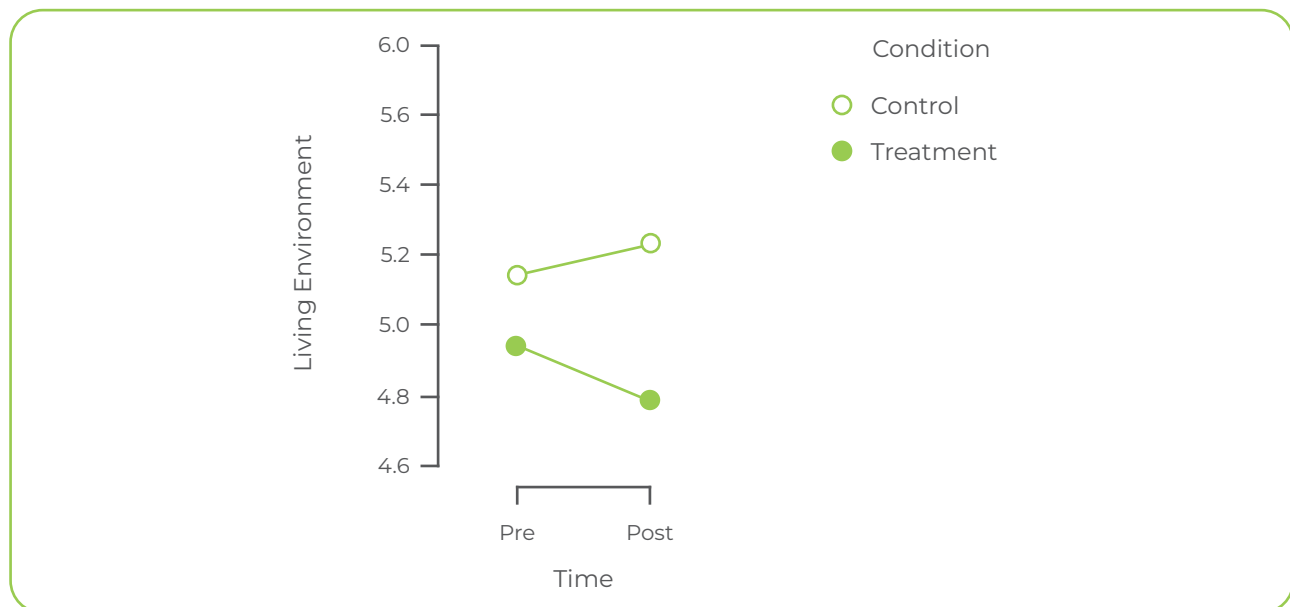


Figure 28 - Line graph for the living environment domain by time and condition

Finally, the domain of satisfaction pertaining to self revealed a slight increase in the treatment group (+0.04), although once again, the evidence does not support the claim that the treatment has any statistically significant causal effect on satisfaction with self ($b = 0.09, F = 0.19, p = .67$).

	SELF PRE-TEST		SELF POST-TEST	
	Control	Treatment	Control	Treatment
Valid	38	38	42	41
Missing	5	6	1	3
Median	5.140	5.000	5.290	5.000
Mean	5.250	4.910	5.197	4.948
Std. Error of Mean	0.086	0.135	0.096	0.099
95% CI Mean Upper	5.419	5.175	5.385	5.141
95% CI Mean Lower	5.081	4.646	5.009	4.754
Std. Deviation	0.531	0.832	0.622	0.633
Minimum	3.860	2.430	3.570	3.710
Maximum	6.000	6.000	6.000	6.000

Table 25 - Descriptive statistics for satisfaction with self

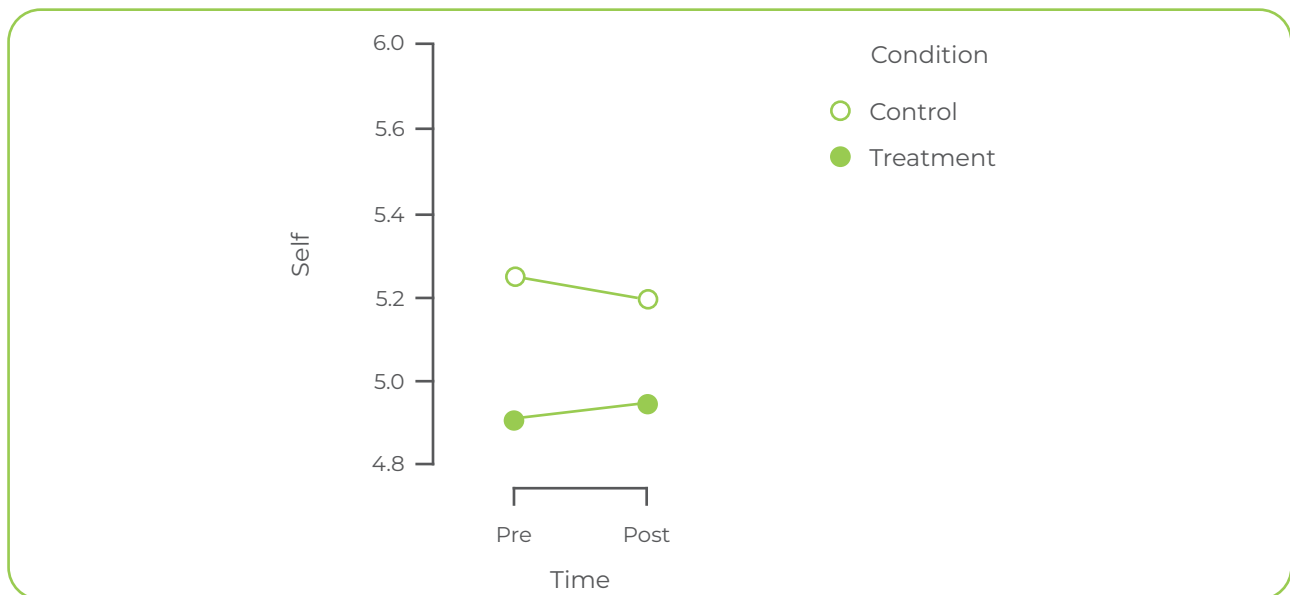


Figure 29 - Line graph for the self domain by time and condition

The lack of statistically significant effects does not support the claim that the intervention had a positive effect on psychological wellness, according to the MSLS.

		GENDER	RABAT	PIETÀ	ŻEJTUN B
Maltese	Pre	$r = .02, p = .87$	$r = .28, p = .01^*$	$r = -.16, p = .16$	$r = -.13, p = .24$
	Post	$r = .06, p = .60$	$r = .23, p = .04^*$	$r = -.12, p = .29$	$r = -.11, p = .33$
English	Pre	$r = -.02, p = .85$	$r = .24, p = .03^*$	$r = .07, p = .56$	$r = -.28, p = .01^*$
	Post	$r = .06, p = .61$	$r = .19, p = .10$	$r = -.23, p = .04^*$	$r = .02, p = .86$
Maths	Pre	$r = -.12, p = .23$	$r = .17, p = .13$	$r = .13, p = .26$	$r = -.27, p = .02^*$
	Post	$r < .01, p = .94$	$r = .23, p = .04^*$	$r = -.08, p = .50$	$r = -.15, p = .18$
Science	Pre	$r = -.06, p = .59$	$r = .09, p = .42$	$r = -.04, p = .70$	$r = -.05, p = .67$
	Post	$r = .09, p = .41$	$r = .20, p = .08$	$r = .02, p = .87$	$r = -.21, p = .07$
Academic Overall	Pre	$r = -.07, p = .53$	$r = .28, p = .01^*$	$r = -.01, p = .93$	$r = -.26, p = .02^*$
	Post	$r = .08, p = .49$	$r = .33, p < .01^{**}$	$r = -.16, p = .17$	$r = -.18, p = .12$
Reasoning	Pre	$r = -.05, p = .67$	$r = -.05, p = .67$	$r = .17, p = .14$	$r = -.09, p = .41$
	Post	$r = -.07, p = .53$	$r = .04, p = .75$	$r = .10, p = .38$	$r = -.12, p = .28$
BMI	Pre	$r = -.08, p = .49$	$r = .01, p = .94$	$r = .09, p = .43$	$r = -.09, p = .45$
	Post	$r = -.09, p = .42$	$r = .05, p = .67$	$r = .07, p = .52$	$r = -.11, p = .33$
Speed	Pre	$r = .19, p = .09$	$r = .10, p = .35$	$r = -.18, p = .10$	$r = .06, p = .59$
	Post	$r = .07, p = .56$	$r = .02, p = .88$	$r = -.04, p = .73$	$r = .02, p = .87$
Locomotion	Pre	$r = .20, p = .08$	$r = .18, p = .10$	$r = -.06, p = .62$	$r = -.12, p = .27$
	Post	$r = .20, p = .08$	$r = -.09, p = .44$	$r = -.18, p = .14$	$r = .25, p = .04^*$
Ball skills	Pre	$r = -.28, p < .01^{**}$	$r = -.04, p = .72$	$r < .01, p = .98$	$r = .04, p = .75$
	Post	$r = -.25, p = .03^*$	$r = .08, p = .52$	$r = -.17, p = .16$	$r = .22, p = .06$
Family	Pre	$r = .05, p = .66$	$r = .08, p = .51$	$r = .09, p = .43$	$r = -.15, p = .20$
	Post	$r = -.28, p = .01^*$	$r = -.15, p = .17$	$r = -.07, p = .53$	$r = .21, p = .06$
Friends	Pre	$r = .16, p = .17$	$r = .11, p = .34$	$r = .06, p = .62$	$r = -.16, p = .18$
	Post	$r = -.02, p = .88$	$r < .01, p = .96$	$r = -.07, p = .50$	$r = .06, p = .61$
School	Pre	$r = .24, p = .04^*$	$r = .01, p = .91$	$r = .17, p = .16$	$r = -.15, p = .20$
	Post	$r = -.04, p = .73$	$r = -.13, p = .24$	$r = .15, p = .18$	$r < .01, p = .99$
Living environment	Pre	$r = -.10, p = .39$	$r = -.13, p = .25$	$r = .26, p = .03^*$	$r = -.08, p = .49$
	Post	$r = -.16, p = .16$	$r = -.12, p = .28$	$r = -.10, p = .37$	$r = .20, p = .07$
Self	Pre	$r = -.05, p = .68$	$r = -.11, p = .35$	$r = -.08, p = .47$	$r = .17, p = .13$
	Post	$r = -.11, p = .31$	$r = -.09, p = .40$	$r = -.19, p = .09$	$r = .25, p = .02$

Table 26 - Correlation matrix for visual assessment of collinearity (* = statistically significant at the 95% confidence level, ** = statistically significant at the 99% confidence level)

TEST FOR EQUALITY OF VARIANCES (LEVENE'S)

H	F	DF1	DF2	p
H ₁	2.222	3.000	155.000	0.088
H ₂	0.352	3.000	155.000	0.788
H ₃	3.990	3.000	155.000	0.009
H ₄	1.191	3.000	155.000	0.315
H ₅	3.166	3.000	155.000	0.026
H ₆	0.547	3.000	155.000	0.651
H ₇	0.350	3.000	160.000	0.789
H ₈	0.292	3.000	152.000	0.831
H ₉	0.514	3.000	152.000	0.673
H ₁₀	2.022	3.000	152.000	0.113
H ₁₁	2.970	3.000	155.000	0.034
H ₁₂	2.348	3.000	155.000	0.075
H ₁₃	5.151	3.000	155.000	0.002
H ₁₄	3.582	3.000	155.000	0.015
H ₁₅	1.722	3.000	155.000	0.165

Table 27 - Homogeneity of variance assumption

3.5 DIMENSIONS SURROUNDING FUN FIT 5

This section expounds on four distinct dimensions emerging as crucial peripheral or ‘orbiting’ elements of the FF5 programme. These dimensions are essential for a comprehensive understanding of the project in terms of potential adoption and replication in similar settings. Figure 30 shows the four mentioned dimensions which surround the FF5 project.

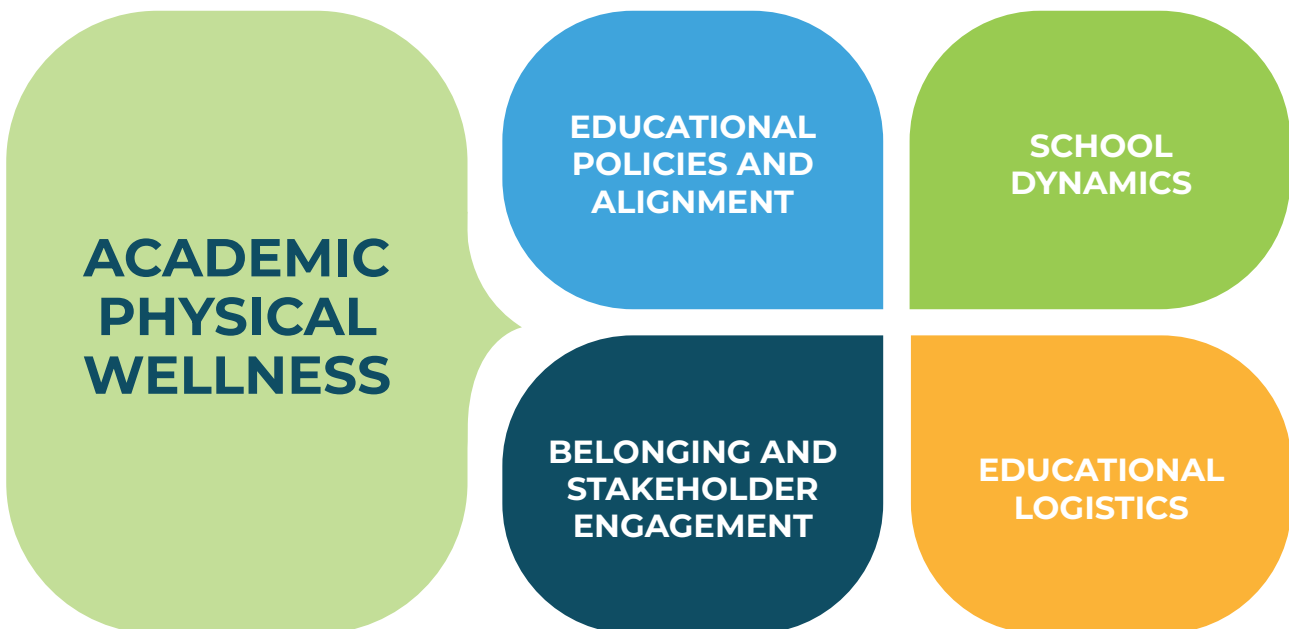


Figure 30 - The four dimensions surrounding the FF5

3.5.1 OVERVIEW OF THE FOUR DIMENSIONS

Dimension 1 - Educational Policies and Alignment

The first dimension describes the interplay between the project and existing educational frameworks within primary education in Malta. This dimension sheds light on the curriculum entitlement and alignment, exposing what the stakeholders think about the project’s integration with the National Curriculum Framework (MEDE, 2012). Additionally,

exploring how the stakeholders relate the learning outcomes taught throughout the Year 4 class, as part of Level 5 of the LOF, sheds light on how the project may contribute to overarching educational objectives. Moreover, this dimension probes how FF5 addresses assessment methodologies and potential benefits or challenges towards cross-curricular teaching approaches.

Dimension 2 - School Dynamics

The second dimension focuses on the school environment's contextual factors. This dimension includes analysing how the stakeholders related to school dynamics, such as demographic information, and providing insights into the diverse student population and if/how FF5 helped in such provision. The dimension delves into the school's vision, the motives driving stakeholders' participation, and potential resistance from staff members. Moreover, it acknowledges the impact of external factors, including the challenges posed by the COVID-19 pandemic on the school community and how this shaped the project's trajectory. Although the pandemic occurred before the project was implemented, it shaped the narrative, and the participants could still feel its effects.

Dimension 3 - Educational Logistics

The third dimension navigates practical aspects that strengthen the FF5 programme. It addresses the logistical considerations taken by the school, as well as other stakeholders, to make sure that the project can be reasonably executed. This dimension taps into human resources allocation, ensuring that qualified personnel are available to oversee and support the daily running of the project. Timetabling considerations played a pivotal role in coordinating the project within the existing Maltese school structure, and this was referred to several times. Moreover, attention is also directed towards identifying and making available the equipment needed for the project to run smoothly while optimising the school environment to facilitate the project's delivery.

Dimension 4 - Belonging and Stakeholder Engagement

The fourth and final dimension orbiting the FF5 summarises the rich, and at times complex, web of stakeholders associated with the FF5 programme. This dimension, underpinned by inclusive and diverse practices, recognises the pivotal role played by the teaching teams within the schools, including the teachers and LSEs. Moreover, the role of the parents/caregivers and the broader community in shaping the project is also explored. By shedding light on the need to foster a sense of belonging within and beyond the school environment, this dimension argues that a collaborative synergy is needed for this project and other projects to be successfully implemented in Maltese primary schools. For instance, the potential benefits of school-community partnerships are explored in this dimension, amplifying the collective strength in driving the project's success.

3.5.2 DIMENSION 1 - EDUCATIONAL POLICIES AND ALIGNMENT

3.5.2.1 Curriculum Entitlement and Alignment

The curriculum entitlement and alignment within the National Curriculum Framework (MEDE, 2012) are critical

in shaping the FF5 programme's trajectory. This involves assessing how the project's objectives align with the mandated educational content and standards. It is essential to ascertain that the project not only complements but also enhances the core curriculum, offering the children following the project a comprehensive educational experience. This alignment needs to be in place so that the project does not function in isolation but contributes meaningfully to the broader educational goals set forth by the Ministry through its national curriculum and policies (e.g. the Healthy Eating Policy). Below are some reflections by stakeholders:

An SLT member, for instance, spoke about the challenges that a Year 4 class presents and explained how:

"... the teachers teaching the upper years start to feel such pressure since children are moving away from an emergent curriculum to a more formal curriculum." (SLT Member)

In recent years, Maltese schools have introduced a child-centred, at times child-led or child-initiated curriculum that stems from the children's interests. This is called the Emergent Curriculum and is explicitly promoted within the Early Years. Following this curriculum, children then transition into a more structured curriculum. The shift to the latter is described by one of the teachers:

"This year (the children) have exams and we also have the curriculum which we need to finish ... for example, if I have an Arts & Crafts session, I will replace it with a more academic lesson so that I fulfil the curriculum." (Teacher)

A FF5 coach also referred to this rigidity in the curriculum, saying they were:

"... aware that there was a curriculum. However, I was not aware that it is so specific. I thought things would move slowly from one thing to another." (Coach)

A parent echoed this, stating:

"... if we really want to promote the FF5, something has to give. Strictly speaking, the curriculum is there for all children, so if the FF5 takes up time, some other things (syllabus content) have to be removed." (Parent)

A parent argued that *"... the FF5 is so beneficial that it should be in all year groups in all schools – it's the curriculum which needs to change."*

3.5.2.2 Learning Outcomes Framework

Within this dimension, exploring how the LOF (MEDE, 2015) interacts with FF5 is essential. This framework outlines the desired knowledge (as well as skills and competencies) students in Malta are expected to acquire in compulsory education. Understanding how the FF5 programme contributes to and augments these learning outcomes provides insights into its pedagogical impact. It also serves as a benchmark for assessing the project's efficacy in achieving its intended educational objectives.

When describing the sessions, a teacher argued that:

"... they seem fun; however, I would have liked to know more about the learning outcomes covered during the session. This does not need to be something official, maybe through a discussion between the teacher and the coach." (Teacher)

Another teacher explained how knowing the learning outcome covered during the FF5 session would have been ideal, "... as I need to input the LO (learning outcome) in the system so that the parents can see it". On the other hand, when asked about learning outcomes, a coach said that:

"My role in the FF5 is to guide and to show the children – strictly speaking, my priority is not the learning outcome but that they (children) are moving – the rest will follow." (Coach)

When mentioning the PE learning outcomes, an SLT member argued, "I have to make sure that the teachers are also doing their PE lessons, and sometimes this is a struggle!" Although PE is one of the subjects within the primary cycle of the LOF, the three teachers explained how 'extra' is the most popular adjective in referring to it. A teacher, for instance, stated that they "... believe that the provision of PE is forced - that we, as teachers, are obliged to do it."

Another teacher argued that this could be seen as extra because:

"... some teachers find it stressful ... maybe the teachers feel that they are in a confined space (teaching academic subjects in their classroom), and so they do not want to get out from their comfort zone." (Teacher)

Another teacher, on the contrary, argued that:

"Even the word 'extra' (referring to the additional lesson given by the classroom teacher) is wrong. PE should not be extra. However, I know PE lessons are the first to be out of the window when teachers are tight with them." (Teacher)

3.5.2.3 Assessment Methodologies

An integral component of this dimension is an examination of the assessment methodologies employed within the FF5 programme. This involves scrutinising student progress and achievement ensuring that assessment practices align with established educational standards. Moreover, it necessitates exploring innovative assessment strategies that may be employed to capture the multifaceted benefits of the project beyond traditional academic metrics.

A teacher explained, "in Year 4, we have continuous assessments, which help us gather the marks along the year". In contrast, another teacher said:

"I have an issue with assessments as they seem to be showing how good the children are when in reality they are working against rather than in favour of the children's well-being." (Teacher)

A parent said they are, "... aware that there are ongoing assessments – it would be best if these are hands-on, as my child is not good at academics". Regarding assessments during the FF5 sessions, a teacher said:

"... there needs to be further discussions between the FF5 coach and the teacher to know how learning is being assessed, as sometimes this was missing." (Teacher)

An LSE also expressed this, saying that:

"... if for example I knew the learning outcome from beforehand, I would have planned for ways how to assess this learning outcomes or for example, to provide some adaptations like different resources so that the child can participate and can also be assessed." (LSE)

A parent also mentioned this lack of information, stating that:

"... as a parent I did not know exactly what was happening – it would be ideal to receive a programme from the school by email – it does not need to be a detailed weekly plan, maybe some basic information about the activities" (Parent)

Another parent, from another school, echoed the same sentiment, "I would have appreciated if I were informed about the sessions, to know what my child is learning". On the other hand, a teacher who was present for the sessions, justified this by saying "I had to be present for the session as ultimately, I am responsible for inputting the assessments and not the coaches." An LSE, from another school, expressed a similar thought, saying it was beneficial to be present during the session, "... as I could assess what the child (student with a statement of needs) is actually learning – I was using the sessions as ways how to observe the child" (LSE).

3.5.2.4 Cross-Curricular Teaching Approaches

This dimension explains the potential use of cross-curricular teaching approaches within the FF5 programme. This entails exploring how the project can facilitate interdisciplinary learning experiences, integrating academic subjects to provide a holistic educational experience. By weaving connections between different subject areas, exploring cross-curricular opportunities ensures that FF5 enhances individual subjects and fosters synergy between core (Maths, Maltese, English, Science) and non-core subjects.

When referring to the various subjects at the primary school level, a teacher said, "We (primary teachers) try to juggle across the many subjects we are given". At the same time, an LSE was concerned that "most teachers focus on Maltese, English and Maths and the other subjects are not given as much importance". However, when asked which subjects are taught at school, a student said, "We have Maths, Music, English, Maltese, Religion, Social Studies and FF5". This is interesting, as children were perceiving this as a new subject. Rather than keeping it solitary, some stakeholders expressed how the FF5 sessions could promote cross-curricular learning. When asked about learning in Year 4, an SLT member argued

that "... it can be more integrated. I am not saying that everything should be integrated, but some subjects really complement each other". Moreover, a teacher explained why they expressed interest in participating in the pilot project, "I like to integrate literacy with PE, Maths with PE – so naturally, this project sparked interest as I knew that I could do this".

Another teacher affirmed this by saying, "I believe that cross-curricular teaching can be done through the FF5. However, the teacher needs to know in advance what will be covered". An SLT member outlines another benefit of cross-curricular approaches within FF5, "... there would be less resistance from teachers as they would be wasting less time by incorporating subjects". However, a coach is of the contrary idea: "I would prefer to have physical activity for the sake of physical activity rather than linked to other subjects". Additionally, a parent expressed interest in this, saying that they have heard about "... the cross-curricular, and it would be great to have a demonstration for parents of what it really is so that we also learn about it".

3.5.3 DIMENSION 2 - SCHOOL DYNAMICS

3.5.3.1 Demographic Information

An exploration of demographic information forms the basis of this dimension. This entails an examination of student demographics, including factors such as socioeconomic background, cultural diversity, and special educational needs. Understanding the diverse composition of the student body is crucial for tailoring the FF5 programme to meet the needs and circumstances of every individual. It also informs strategies for ensuring inclusivity and equity in project participation.

When asked about the demographics represented in their school, an SLT member said that "... more smiling faces around the school" are present, referring to the post-pandemic era. Another SLT member expressed how many students "... have the mental skills to adapt to what happened to them." referring to the post-pandemic period. A parent continued to argue that children:

"... are like a different generation – they know that school is important; however, it is not the only thing in their life. They spend eight hours at school (potentially referring to those either arriving earlier for the Breakfast Club or staying on for the Klabb 3-16) and know that after school, they cannot take on more work." (Parent)

A student confirmed this, "The children sit for too long on chairs, I don't like it". The discussion also focused on the students' extracurricular activities. For instance, one of the students said, "... not many children are active in my class, after school, all they do is stay home and do their homework" while another student from another school said, "... it (FF5) is important for all children because those who do not have extracurricular, they have it at school". Could it be a question of demographic mindset? An LSE argued that at school, "... we have a lot of foreign students who, somehow automatically, go to a lot of extracurricular activities." A parent went on to say that "... many parents wish to send their children to after-school activities, but

they do not. I think money is the problem". A teacher continued to elaborate on this, recounting how "... once a parent had given me some money so that I buy resources for PE". Another parent said how FF5 "... sparked an interest in my child. Now that he is doing the FF5 at school, he wants to start extracurricular activities. So we did."

3.5.3.2 School Vision and Mission

The school's vision and mission statement guide educational involvement, as with FF5. Within this dimension, it is crucial to dissect these statements, identifying the core values and goals that underpin the school's educational philosophy. Aligning the FF5 programme with the school's vision ensures a solid approach towards holistic student development. Moreover, it fosters a sense of continuity and integration, reinforcing the project's significance within the broader educational context linked to Dimension 1.

An SLT member argued that "... the well-being of children in this school is our main priority. We really try to instil a calm atmosphere where children can feel mindful about what happens in their lives." Another SLT member (from another school) agrees:

"We try to give our children a sense of structure. The way we structure the day, the activities we give them, we always try to make their day as interesting and as engaging as possible." (SLT Member)

The third SLT member also discussed this sense of well-being as part of the school vision:

"Children want someone with whom to talk, someone who listens. They know they can come to talk to us any time – we are not just the persons who manage their schools; we are also their friends." (SLT Member)

Interestingly, children also referred to the vision of the school they attend. When asked why they think their school is participating in the FF5 programme, one of the students said, "... it is because of our Head of School. I think this is why ... the Head of School wanted this." Another student from the same school continued:

"I think the Head of School ... maybe wanted to see what happens when we do the FF5? Maybe if things change, or if I can run faster or maybe if someone in class can do things quicker?" (Student)

Another student from another school also mentioned their Head of School:

"I think the Head wants to see what happens, maybe to see what happens if we do physical activity every day. Maybe then they see that we are happy ... and so ... they start doing this in all classes in our school?" (Student)

3.5.3.3 Stakeholder Motives and Engagement

Dimension 2 covers the motives driving stakeholders' participation in the FF5 programme. This includes educators, administrators, parents, and other relevant parties. Understanding stakeholders' underlying motivations and expectations provides valuable insights

into their level of engagement and commitment. It also enables the project team to tailor communication and support strategies to address specific concerns or interests, ensuring a collaborative and mutually beneficial partnership. Different stakeholders have different motives.

An SLT member explained,

"... there is a feel and the need to do more at school. However, sometimes, teachers only do what is expected of them. This can be frustrating as we want them to do more and go the extra mile." (SLT Member)

Similarly, one of the coaches pointed out:

"... the teachers are different – there are those who really enjoy this and want to be the ones doing the session. Then, others... who do not give much attention to the session. You can feel that the approach is different. We feel it." (Coach)

The motives of parents were also noted. One parent said,

"It is not good that your child is brilliant (good at academic subjects), but physically he is not well"

Another parent continued:

"... and I believe there is a need for this FF5. Some children stay long at the club (Klabb 3-16); they do not have time to move around. It would be a good initiative to be implemented in all schools – as it is beneficial. As a parent, I can see it is beneficial." (Parent)

Another parent continues to explain how their child:

"... has been exposed to many different sports. Now it is not just about football – my child learnt about different sports. It feels as if the FF5 gave way for new horizons – we are very happy." (Parent)

The child of this same parent added, "Me and my parents now go outside more often ... we go climbing, running, jumping, it's fun". When asked if all children in the class have the same shared enthusiasm about FF5, another child said, "... not everyone, because I have some friends, and some of them do not like physical activity. But most of them do." An LSE perfectly explained this:

"When they hear the classroom telephone ringing, they know it's time for the FF5 – they grab their water bottles and head towards the yard – all excited!" (LSE)

3.5.3.1 Potential Resistance and External Factors

Acknowledging potential sources of resistance within the school environment is crucial in any effective project implementation. These might include apprehension on the part of staff members, logistical challenges, or other institutional barriers. Dimension 2 also considers external factors that could impact the project, such as policy changes, resource constraints, or, as observed in recent times, unforeseen events like the COVID-19 pandemic. Stakeholders can navigate these hurdles by identifying and proactively addressing potential sources of resistance and external challenges with informed strategies.

The COVID-19 pandemic was primary among external factors. For instance, an SLT member explained, perhaps even justified, how:

"... at school, one has to be flexible – the days are different, and circumstances change. Sometimes it was not easy, but knowing what happened in the past (referring to the COVID-19 pandemic), we tried our best not to make children miss the FF5." (SLT Member)

Another SLT member argued, "... we feel like the pandemic (COVID-19) affected them (children) a lot, it feels like they missed the basics". In contrast, another SLT member explained how "... the pandemic has had its damage – all teachers are feeling overwhelmed due to COVID-19 – it's a strange phenomenon". The third SLT member continued:

"... children want a sense of stability; they came to school and did not know if schools would shut. It felt very strange. This year, we are back to normal. Teachers are somehow more grounded; they (children) can talk to their teachers, but at the same time, there is structure. We are seeing that they (children) are more concentrated. We missed this." (SLT Member)

Change brings about resistance, and this is only natural. Two LSEs mentioned how their colleagues would have resisted the project. The first explained how teachers not participating in the project were resistant:

"... since it is done every day. There are some of them (teachers) who are saying that they would not manage the syllabus on time. These were not part of the project, so maybe they did not know exactly how it works." (LSE)

Another LSE from another school confirmed this:

"Some teachers said that it is impossible that they do the FF5 every day – they always mention the curriculum (syllabus content) and the lack of time." (LSE)

3.5.4 DIMENSION 3 - EDUCATIONAL LOGISTICS

3.5.4.1 Human Resources Allocation

One of the fundamental aspects of Dimension 3 pertains to the allocation of human resources. This involves identifying and deploying qualified personnel to oversee and support the FF5 programme. It encompasses roles such as project coordinators, instructors, and support staff. Ensuring individuals possess the requisite expertise and training is crucial for delivering high-quality educational experiences. Additionally, ongoing professional development and support mechanisms should be established to enhance the project team's effectiveness. Students commented on the human resources available. One of the students said:

"If they are going to do it (FF5) every day, this would not be possible. Let me tell you why. There aren't many teachers, and they must go from one class to another. Or also from one school to another. This is impossible." (Student)

Another student continues:

"Sometimes we would have short FF5 sessions because they (the coaches) have to go to another school to do the session with other children." (Student)

3.5.4.2 Timetabling Considerations

Effective time management ensures that the FF5 programme is integrated into the school's daily operations. This involves careful consideration of timetables to accommodate the project's various components, including academic activities, physical exercises, and wellness initiatives. Coordination with existing classroom schedules and other activities and projects happening at school - this is essential to avoid conflicts and optimise student participation. Furthermore, flexible scheduling mechanisms may be implemented to accommodate diverse learning needs and preferences. When asked about this, an SLT member said:

"We gave them a timetable with all the time slots of the FF5 so they know when the session will be held. However, one needs to remember that this is a school, and so many unexpected things crop up during the day." (SLT Member)

An LSE said that there were days:

"... when we thought the session would start at 9 a.m. and then they informed us that they changed the time and would do it at another time. However, this is understandable. We tried our best to understand them (the coaches)." (LSE)

Another LSE continued how:

"... the teacher would have a plan for the day, and then, to change the plan sometimes was not easy. We tried to be as flexible as possible." (LSE)

A third LSE explained how timetables were sent beforehand by email,

"If I were in doubt about the session, I would check the timetable. However, we had sessions in different time slots on different days, which is not ideal. If we have a fixed timeslot, this will help us a lot." (LSE)

A teacher also mentioned how:

"... in class, I have a timetable and a plan of the lessons of the day - sometimes, if a Coach came earlier or later, it would mix up my day - for example, cutting a lesson short is not ideal because it would be difficult to continue it after the FF5, you have to keep the momentum of learning." (Teacher)

When asked about practical examples of how this could be solved, a teacher suggested that:

"... the time (of the session) needs to be shorted, for example, 30 minutes, not 40 minutes - this would help a lot."

An LSE suggested that "times should be fixed" and a teacher explained that "if we would have a timeslot on the timetable for the FF5 - this would help us a lot."

Interestingly, none of the nine interviewed children mentioned timetable issues.

3.5.4.3 Equipment Procurement

Dimension 3 addresses the procurement, maintenance, and upkeep of the equipment necessary for the FF5 programme. This encompasses a wide range of resources, including sports equipment and educational materials, which could be used to facilitate the extension of FF5 in the classroom. This could potentially also include technological material. Ensuring these resources' availability, functionality, and safety is imperative for delivering a comprehensive and enriching educational experience. Establishing protocols for regular maintenance and periodic equipment assessments is essential to mitigate potential disruptions and maintain a conducive learning environment. When asked about the equipment used during the FF5 session, one of the students mentioned, "... a ball, cones, frisbees - however, the ball was my favourite". Another student said, "... the favourite thing I used in the FF5 was the skipping rope. Oh, and the hula hoop is the least I like to use." A student from another school said:

"We used balls and hoops during the games. Sometimes, we had to take one hoop and sometimes two hoops, depending on the game of the coach." (Student)

Another student from another school also referred to the FF5 as "games", explaining how sometimes, "... we played the games in pairs".

When asked about the equipment used, an LSE explained that:

"... we used a lot of different equipment during the session. I feel bad saying this, but as a school, we used new equipment that we had never seen before. I think it belongs to the school, but I am unsure." (LSE)

This point encourages us to reflect on how much the staff at school are aware of, much less have access to, useful resources available at school. It could be interesting to create an inventory of all the equipment available at school so that everyone would know what is available. Another LSE from another school also says:

"I think that sometimes coaches brought their resources or may they bring them from somewhere else, maybe from the Malta FA. These resources were very good, even for 'our' children (referring to students with a statement of needs)." (LSE)

3.5.4.4 Environmental Optimisation

The school's physical environment plays a crucial role in shaping the FF5 programme's impact. Within this dimension, attention is directed towards optimising the school's physical spaces to facilitate the project's seamless integration. This may involve considerations such as classroom layout, outdoor play areas, and designated spaces for physical activities. Creating an environment conducive to academic and physical development is essential for maximising the project's effectiveness.



The stakeholders' perspectives collectively emphasise the pivotal role of the physical environment in shaping the FF5 programme's impact. The SLT underscored the importance of addressing premises-related issues and acknowledging potential student disparities. Their recognition of the need for inclusive strategies sets the stage for optimising the available resources. In alignment with this, a coach unequivocally asserted, *"Infrastructure is the number one most important thing, before the staff, before the personnel."* This statement focuses on the physical infrastructure as the most important thing for the project's success, prioritising it even above personnel considerations.

Furthermore, the coach provided a practical suggestion, *"For example, the school can use the sports ground in the locality, or let's say, against a small payment."* This pragmatic approach demonstrates a readiness to utilise local resources, potentially overcoming limitations within the school's physical layout. In contrast, the students offered first-hand experiences and preferences regarding the designated spaces for FF5 activities. One student voiced a clear preference for the yard, declaring it as their "favourite spot." However, they acknowledged the occasional need for alternative spaces during Year 6 benchmark assessments, highlighting the importance of adaptability in scheduling.

Conversely, another student voiced their frustration over the limitation on yard use during exams, emphasising the need for alternative spaces. This perspective underscores the challenge of balancing academic priorities with the project's PA initiatives. Another student from a different school added nuance to the discussion by pointing out limitations associated with the yard. They noted that the proximity of classrooms necessitates a quieter approach, providing a counterpoint to the preference for outdoor spaces. This observation highlights the importance of balancing academic needs and PA harmoniously.

Turning to matters of safety and health, two students expressed some concern. One student emphasised the need for non-slip tiles in the yard, citing a specific incident where a student fell and was injured. This concern highlights the practical considerations for ensuring a safe environment, particularly for movement activities. In response, another student recognised that accidents can occur, asserting, *"You can get hurt in the schoolyard, but it is not the coaches' fault ... it is not something which they could have prevented."* This statement acknowledges the shared responsibility for safety and underscores the need for proactive measures to minimise potential risks.

Collectively, these perspectives provide a broad view of the challenges and opportunities presented by the physical environment in the context of the FF5 programme. The stakeholders' insights highlight the multifaceted considerations in creating an environment conducive to academic and physical development.

3.5.5 DIMENSION 4 - BELONGING AND STAKEHOLDER ENGAGEMENT

3.5.5.1 Teacher Involvement and Collaboration

Within Dimension 4, the role of teachers assumes paramount importance. This includes those directly involved in delivering the FF5 curriculum and all educators within the school community. Fostering an environment of collaboration, where ideas and expertise are shared, enhances the collective impact of the project. Encouraging open communication and providing professional development and feedback opportunities contribute to a cohesive and supportive educational ecosystem.

Within the FF5 programme, the role of teachers is pivotal, extending beyond the mere delivery of curriculum to encompass the entire school community. This collective engagement creates an environment where ideas and expertise are freely exchanged, enhancing the project's impact. Additionally, fostering open communication and providing avenues for professional development and feedback is instrumental in nurturing a cohesive educational ecosystem. A teacher highlighted a crucial concern, underscoring a perceived deficit in specialised training:

"As primary teachers, I feel that we never receive training about how to implement the PE syllabus or how to help children reach the fundamental skills." (Teacher)

Interestingly, this teacher used the term "fundamental", which resonates significantly within the FF5 programme's physical testing, drawing an essential connection between pedagogy and physical development. Another teacher offered insight into the nature of PE, emphasising syllabus comprehension and the attainment of learning outcomes:

"I feel that PE is more about the syllabus and how you understand it and try to reach the learning outcomes with the children in your class. Some of the teachers in my school skip it (the PE lesson), or they do something short in class." (Teacher)

A teacher candidly acknowledged practical constraints, addressing the challenge of limited space and time constraints during adverse weather conditions:

"If it is raining, we do not have space where children can play outside, apart from the lack of time. All teachers have this issue. Who says that time is not an issue is lying." (Teacher)

This pragmatic perspective calls for solutions to ensure physical activities remain viable under varying circumstances. One of the parents' viewpoints offered a glimpse of the positive reception of FF5 among teachers, *"... the teacher seemed very positive about it because, you know, teachers at this school try to put the parents' mind at rest."*

This observation attests to the school's effort to reassure parents of the project's benefits. An LSE's involvement extends beyond the classroom, emphasising collaborative efforts with teachers and coaches:

"Since I am there with the teacher, we are there with the coaches, but sometimes we have to do something else, like discuss an event or plan something together. However, we still check the children and see their progress – however, we would be observing other things happening or other things about the children themselves." (LSE)

From the student's standpoint, agency and preference come into focus. They recounted instances where their desires were recognised, highlighting the adaptable nature of the programme:

"For example, sometimes someone (referring to another child in class) wants to do something else, and sometimes the teachers used to get to see this – maybe a child wants to do an activity, and the coaches understand this, and they do it." (Student)

The active participation of teachers in sessions is celebrated by one of the students, who noted:

"Our teacher made the session more fun by always playing with us. Sometimes, the teacher told the coach to do something (referring to an activity) for us." (Student)

Another LSE echoed a sentiment of inclusion, emphasising their active participation in the project alongside the children:

"As an educator, I feel that I was included in the project with the children, and sometimes I participated. The coaches were very encouraging, too." (LSE)

These perspectives collectively underline the intricate web of teacher involvement and collaboration within the FF5 programme. The challenges, dedication, and synergistic efforts between teachers, parents, students, and coaches are central to the initiative's success, underscoring educators' profound influence in shaping holistic learning experiences.

3.5.5.2 Learning Support Educators and Specialised Support

Including LSEs is a crucial aspect of Dimension 4 in recognition of the diverse learning needs of students. Collaborative efforts between LSEs, classroom teachers, and project coordinators ensure that individualised support is provided to all students, including those with special educational needs. This inclusive approach reinforces the notion that every student, regardless of their abilities or challenges, belongs within the FF5 programme. This inclusive approach emphasises the belief that every student has a place within the initiative, regardless of their abilities or challenges.

LSEs contribute unique critical insights, discerning the nature of physical activities and their potential impact on students with varying abilities. One LSE noted:

"It depends on the type of impairment the children have ... for example, during the physical activity, I still feel that there were some activities which were not as inclusive for all children." (LSE)

This observation highlights the need for tailored approaches, recognising that inclusivity requires thoughtful consideration of each child's unique circumstances. Another LSE shed light on the challenges faced by students with specific needs, advocating for adapted activities:

"Depends. For example, if there is a wheelchair user, I do not think they can do things like hopping and running – so when other children are doing so, what does this child do? We need to think of adapted ways to do an activity – maybe coaches need training about that." (LSE)

This call for specialised training for coaches highlights the importance of equipping educators with the tools to create an inclusive environment. Acknowledging the positive aspects of the activities, an LSE recognised their adaptability, affirming:

"I feel that the activities were really good; they were different. They would not inform us of the activities beforehand, but the children I work with somehow adapted well. But yes, it would be ideal if they (the coaches) inform us (the teachers and LSEs) about the activities so we can plan accordingly." (LSE)

This articulation emphasises students' adaptability and resilience while advocating for improved communication between coaches, teachers, and LSEs. A collaborative approach between LSEs and coaches is proposed by another insightful LSE, who suggested:

"There are different children with different abilities. I can think of some children I supported in the past who could not do the activities. Maybe we need to talk with the coaches and tell them which activities are suitable and which are not ... so that everyone can participate in the FF5." (LSE)

The proposal purports to the value of open dialogue and partnership, aiming to tailor activities to the specific needs of each student. Teachers also play a pivotal role in facilitating inclusivity within the FF5 sessions. One teacher recounted the interactive nature of the activities, highlighting how students proactively engage with their LSEs:

"Even I used to enjoy playing with them, and I could see some children going to their LSEs to ask them to join the game. Some games were very interesting and interactive." (Teacher)

This observation not only attests to the appeal of the activities but also underscores the pivotal role of LSEs as facilitators of engagement. Furthermore, teachers commended the detailed explanations provided during activities, ensuring that all students can participate:

"The activities were explained step by step so all children could understand. Sometimes, the coaches would explain twice and three times." (Teacher)



This conscientious approach speaks to coaches' commitment to fostering an inclusive environment. Observations from the SLT highlighted the perception of inclusivity among staff while also raising a valuable point regarding communication, *"Yes, the sessions seem to be inclusive, and that's what the staff told me."* This insight prompts reflection on the necessity for SLT members to engage in deeper conversations with teachers, enabling a more comprehensive understanding of the content and impact of the PA sessions.

Finally, a parent's endorsement of their child's enjoyment of the sessions brought to light another intriguing dynamic, *"The parent of the child I support told me that the child enjoys the sessions."* This parent-teacher-LSE concordance foregrounds the validity and importance of feedback loops, with parents actively engaging in conversations about their child's experience within the FF5 programme.

In summary, the testimonials from LSEs, teachers, SLT members, and parents collectively reveal an intricate interplay between specialised support, inclusive activities, and effective communication. The observations and suggestions put forward by these stakeholders illuminate a path towards fostering an environment where every student, regardless of their abilities, feels included and empowered within the FF5 initiative.

3.5.5.3 Parent Engagement

The involvement of parents and the wider community forms a cornerstone of Dimension 4. Engaging parents through regular communication, informational sessions, and participation in project activities strengthens the home-school partnership. Additionally, reaching out to the broader community, including local organisations, businesses, and community leaders, fosters a sense of collective responsibility for the students' holistic development. This engagement creates a supportive network that extends beyond the confines of the school.

In the FF5 programme, parent engagement emerges as a vital component. One parent aptly expressed:

"I feel that the FF5 increased the parental involvement at the school – we were informed about the project and were given updates about it, also through social media." (Parent)

This sentiment underscores the project's efficacy in involving parents and keeping them well-informed about its progress. Another parent highlighted the profound impact of FF5 on their child, noting:

"My child loves sports, so this (referring to the FF5) really helped. I also noticed that after the FF5, the behaviour improved. Maybe there is a link between the two." (Parent)

This observation highlights a positive link between the programme and enhanced student behaviour. For other parents, the significance lay in their child engaging in sports-related activities at school. They expressed:

"The fact that he is doing something at school which is sports related ... for me ... it's very important. It is like he took his break during the day, making me feel calmer." (Parent)

This perspective emphasises how physical activities can serve as valuable breaks in the school day, contributing to a more composed learning environment. Moreover, a parent articulated a prevailing desire for more initiatives similar to the FF5, *"I really wish they have more things like this at school ... because, for me, that is quality time for my child."* This sentiment further establishes perceived value among parents in relation to the project, recognising the sessions as invaluable quality time for their children.

Upon attending sessions, parents shared a resounding sentiment of enjoyment. One parent reflected, *"When they invited us to the session, I enjoyed it. It was evident that my child was looking forward – he used to enjoy it. I enjoyed it, too."* This collective experience of enjoyment and anticipation illustrates the project's positive impact on students and parents. Furthermore, a parent offered a holistic appraisal, stating, *"I think this FF5 makes a lot of sense, and even my child enjoyed it. I think it was one of the highlights of the year."*

This endorsement reflects the programme's resonance with parents, who perceive it as meaningful and a standout feature of their child's educational experience. In a heartening revelation, one of the students shared their perspective, *"I enjoyed the different sessions, and when I go and tell my mum about it, I think she learns new things as well."*

This exchange of experiences between student and parent reinforces the programme's positive impact on the child and fosters a dynamic of shared learning and discovery. Finally, a parent expressed a desire for more detailed information regarding the content of the sessions. They mused:

"I wish I knew more about what the sessions would involve. Because it is like, you sign (the consent form), and you say that you will send them to the sessions, and I know they had fun, but I wanted to know more about what they are actually doing." (Parent)

This constructive feedback demonstrates the importance of keeping parents informed and valuing them fully as partners in their child's formal educational journey.

3.5.5.4 School-Community Partnerships

The potential benefits of school-community partnerships are explored in depth within this dimension. Collaborative initiatives with external organisations, such as sports clubs, health institutions, and cultural groups, can significantly enrich the FF5 concept. These partnerships offer access to specialised resources, expertise, and opportunities that amplify the project's impact on the APW domains. Creating mutually beneficial relationships ensures that the project becomes integral to the broader community fabric. The potential benefits of school-community partnerships are explained through the perspectives of various stakeholders involved in the FF5 programme. A parent emphasised the significance of enhanced collaboration with the community:

"I think we can collaborate more with the community – I would prefer if my child has more hands-on sessions and learns certain life skills which he will definitely need in life." (Parent)

Another parent explained how the school is like a family, expressing satisfaction:

"The school is like a family. This year, we are feeling heard. We also felt happy that someone spoke to us about the project, that the people from MCAST came to talk to us about the project, this was very good." (Parent)

A student provided perspective on the broader impact of initiatives like FF5, advocating for universal participation across schools:

"I think all schools need to participate because it improves people, and people get sicker if they do not do physical activity. Maybe we can also do something in my town with other children from other schools, like the FF5, for more children, not only from this school." (Student)

3.4.6 CONCLUSION

The qualitative data analysis of the FF5 programme yields four dimensions that are peripheral yet intrinsic to its success and have implications for its replication or dissemination of similar initiatives in primary education in Malta. These dimensions, **Educational Policies and Alignment, School Dynamics, Educational Logistics, and Belonging**, collectively form a robust framework that underpins the project's efficacy and transformative potential. Addressing **Educational Policies and Alignment** ensures integration with established educational frameworks, aligning the project's objectives with national curriculum standards and learning outcomes. This fortifies the project's foundation and reinforces its relevance within the broader educational context. Moreover, by considering potential uses of cross-curricular teaching approaches, the project could catalyse interdisciplinary learning, enriching students' experiences. In examining **School Dynamics**, the diverse demographic composition of the student body is recognised as a fundamental factor. Tailoring the project to accommodate varying socio-economic backgrounds, cultural diversities, and abilities ensures inclusivity and equity. By aligning with the school's vision and mission, the project assumes a cohesive role in advancing the school's educational philosophy, offering a holistic educational experience beyond the FF5 sessions. **Educational Logistics** addresses the practical considerations essential for successful project implementation. From human resources allocation to meticulous timetabling, ensuring equipment availability, and optimising the school environment, this dimension establishes a well-organised framework for the project's operation. These logistical considerations, when addressed, can mitigate potential disruptions and foster an environment conducive to learning and growth. The **Belonging** dimension recognises the collective strength that arises from inclusive stakeholder engagement. A supportive network is forged by nurturing collaborative relationships among teachers, LSEs, parents, and the wider community. Inclusive and diverse mindsets and school-community partnerships maximise the project's impact, extending its reach well beyond the classroom walls. While intrinsic to the FF5 programme, these four dimensions confer transferable insights for similar initiatives in Malta's primary education field. By addressing these dimensions, stakeholders can be expected to pave the way for projects that enhance **APW** domains and lay the foundations for lifelong learning and holistic development in the students they serve.



CHAPTER 4

CONCLUSIONS

4.1 INTRODUCTION

This chapter addresses the research study's limitations and makes recommendations for future interventions and studies. Reflective insights on the findings and their implications are given. Acknowledging the limitations of the project, as with any empirical undertaking, helps draw realistic boundaries around the findings, contextualises and grounds them, and encourages caution in their interpretation. Recommendations are given with a view to informing future initiatives like the FF5 programme, as well as future studies of such initiatives. Finally, we present a condensed and coherent set of take-home points to summarise our main findings.

4.2 LIMITATIONS

As with any research project, FF5 encountered various limitations that warrant careful consideration. These limitations can be categorised into five overarching clusters, each illuminating specific aspects of the research study's design, implementation, and interpretation. By examining these umbrella themes, one can understand the contextual factors that may have influenced the outcomes and conclusions drawn from the project. The following sections delineate these themes, providing a structured framework for evaluating the research study's findings and offering valuable insights for future research in PA interventions within educational settings.

CLUSTER	LIMITATIONS
A. Study Design and Implementation	1. Limited Duration of the Study 2. Unmeasured Benefits and Risks 3. Measurement Inherent Limitations
B. Intervention Delivery and Scope	4. Specific Delivery Method 5. Limited Coaching Staff 6. Year-Specific Focus 7. Session Duration 8. Coaching Expertise 9. Diversity in Input and Teaching Methodologies 10. Potential School-Specific Needs
C. Perspective and Bias Considerations	11. Inherent Political Bias 12. Participant Dropout and Information Sharing 13. Incomplete Testing Data 14. Selection Bias 15. Variability in the Group Selection Process
D. Data Collection and Ethical Considerations	16. Lack of Collaboration with PE Teachers 17. Pedometer Data Limitation 18. Ethical Considerations
E. Others	19. Lack of Clarity in Programme Objectives 20. Limited Programme-Specific Coach Preparation

Table 28 - Limitations' clusters

4.2.1 LIMITATION CLUSTER A: STUDY DESIGN AND IMPLEMENTATION

Limited Duration of the Study

The one-year time frame provided some valuable insights but restricted our ability to investigate the potential long-term effects of the intervention. It should be noted that effects may manifest beyond the confines of the research study period, particularly when interacting with other factors like continued participation in other projects.

Unmeasured Benefits and Risks

While the research study focused on specific outcomes, the selection of outcome measures is ultimately limited by practical constraints. Not all outcomes can be tested; therefore, much must also be left out. In this sense, the programme may have yielded effects that our measurements have not captured. Any number of additional factors may have been important with respect to the long or short-term effects of FF5.

Measurement Inherent Limitations

As with any quantitative measure and application of inferential statistical claims, measurement error is expected, the magnitude of which can only ultimately be ascertained with confidence through repeated studies.



4.2.2 LIMITATION CLUSTER B: INTERVENTION DELIVERY AND SCOPE

Specific Delivery Method

The FF5 programme was designed around the PE syllabus, emphasising certain aspects of physical literacy. Alternative delivery methods with emphasis on different content and aims may have yielded different outcomes. For instance, a programme based instead around fitness-related goals like improving cardiorespiratory fitness, muscular strength and flexibility may have led to different results.

Limited Coaching Staff

The use of three coaches introduced an element of sensitivity to individual coaching styles. A broader pool of coaches would have reduced such sensitivity and maximised focus on the intervention while controlling for individual differences in the delivery of coaches.

Year-specific Focus

The intervention focused exclusively on Year 4 students. Caution should be exercised in generalising the results to other years. Also, the possibility of age-specific factors confounding the results cannot be ruled out.

Session Duration

The research study was based on the delivery of 45-minute sessions. Therefore, we cannot make claims about the possible effects of shorter or longer sessions.

Coaching Expertise

Providing PA sessions by coaches instead of PE teachers means that we can only make claims about PA sessions in the context of their delivery by sports coaches.

Diversity in Input and Teaching Methodologies

While an attempt was made to select a diverse sample of schools, variations across schools were evident. We have not reported any effects resulting from such differences.

Potential School-Specific Needs

While the three schools were selected precisely to maximise representativeness for making claims about Maltese primary state schools in general, a sample size of three still ultimately cannot provide a full picture of realities in the entire population of 68 Maltese primary state schools.

4.2.3 LIMITATION CLUSTER C: PERSPECTIVE AND BIAS CONSIDERATIONS

Inherent Political Bias

Participants' perspectives may have been influenced by personal or institutional biases, potentially impacting the authenticity of the data collected. While every effort was made to elicit honest feedback, the influence of external factors cannot be entirely mitigated.

Participant Dropout and Information Sharing

One parent participant dropped out, resulting in missing qualitative data. This absence may have affected the research study's overall representation of parent perspectives. Additionally, one SLT member requested interview questions in advance, potentially introducing bias in their responses.

Incomplete Testing Data

Some students did not participate in the pre-and post-tests, potentially skewing the quantitative data. This incomplete data may limit the accuracy of the research study's findings regarding the impact of the intervention on specific outcomes.

Selection Bias

Participating schools applied through an open call, indicating a self-selected group with a specific interest in the programme. Schools that did not participate may have had different viewpoints, characteristics, or experiences, potentially introducing a selection bias.

Variability in the Group Selection Process

The process of allocating participants to treatment and control groups is a crucial element in the design of experiments. We were unable to randomly assign students to the treatment condition because groups were already naturally formed as classes. We compensated for this by instructing the SLTs of the respective schools to select their treatment and control classes randomly, ideally by flipping a coin. We could not directly oversee this process and ultimately had to trust in the schools to conform to true random selection. If classes were not selected randomly, it is very difficult to predict what forms of bias could have arisen and how the results have been affected.

4.2.4 LIMITATION CLUSTER D: DATA COLLECTION AND ETHICAL CONSIDERATIONS

Lack of Collaboration with PE Teachers

Coaches operated independently of the school PE teachers, potentially resulting in a disconnect between the FF5 programme and existing school practices. This lack of collaboration may have influenced the overall effectiveness and integration of the programme within the school environment.

Pedometer Data Limitation

Pedometer data was collected for only one week, offering a snapshot rather than a comprehensive understanding of PA levels. While this provides valuable insights, a more extended data collection period would have provided a more robust understanding of participants' activity levels over time.

Ethical Considerations

Due to ethical constraints, detailed socio-economic background and out-of-school PA data were unavailable. This limitation prevents a comprehensive understanding of participants' contexts, potentially impacting the interpretation of the research study's findings.

4.2.5 LIMITATION CLUSTER E: OTHERS

i. Lack of Clarity in Definition or Mission Statement

The programme did not provide a clear definition or mission statement for the daily sessions on purpose, not to instigate bias. This lack of clarity may have led to varied expectations among participants and coaches, potentially influencing the programme's outcomes.

ii. Limited Programme Specific Coach Preparation

Coaches received limited programme-specific training and may have benefited from more extensive preparation prior to implementation. Additional training could have equipped coaches with a more comprehensive understanding of the programme's objectives and methodologies.

4.3 RECOMMENDATIONS

4.3.1 ENHANCING PROGRAM DESIGN AND IMPLEMENTATION

Conduct Longitudinal Studies

Studies that span multiple scholastic years would be better placed to gauge the long-term effects of daily PA.

Integrate PA Organically

The pedometry research study, in particular, suggests that PA integrated organically throughout the day and not necessarily confined to structured sessions may yield greater step counts overall.

Promote Ad Hoc PA

Adding to the previous recommendation, initiatives facilitating increased organic PA outside school hours ultimately have a significant capacity to increase step counts.

Strengthen Coach Training and Expertise

More comprehensive training for coaches, including technical skills and pedagogical approaches, will likely be a significant factor in the success or failure of any structured PA project like FF5. This specialised training would equip coaches with effective teaching methodologies tailored to the unique needs of future projects, provided these are carefully delineated.

4.3.2 CLARIFYING PROGRAMME GOALS AND OBJECTIVES

Define Clear Program Direction

A clear vision and specific objectives for the PA programme to follow is absolutely necessary.

Foster Collaboration Between Coaches and PE Teachers

Protocols involving closer collaboration between coaches and PE teachers need to be developed to avoid fragmented initiatives.

4.3.3 BALANCING EDUCATIONAL DOMAINS

Prioritise APW Domains Equally

At the policy level, all three domains— academic, physical, and wellness should be considered for a balanced and holistic educational experience.

4.3.4 INTEGRATING PHYSICAL ACTIVITY INTO DAILY SCHOOL LIFE

Gaps in School Routine

Further to the above, existing gaps in and surrounding the school day can be considered for additional movement-based activities. For instance, walking to and from school and organising classes/activities such that a minimum number of steps are required simply in traversing these various locations in and around the school.

Ensure Sustainable Funding for Facilities

Adequate resources for maintaining school grounds and open spaces are needed, creating conducive environments for PA.

4.4 REFLECTIONS AND CONCLUSIONS



Figure 31 - During one of the research team meetings

Several remaining observations and insights held by the researchers, at this stage, are well worth sharing. First, it should be noted that the research study was not a comparison between doing PA and not doing PA. In other words, the treatment effects in question pertained to the provision of daily PA sessions by Malta FA coaches, set in comparison to the regular routine of Year 4 students in Malta. The 'normal' routine of Year 4 students, designated as our control condition, includes PE lessons and exposure to various PA and sports initiatives. Ergo, the effects we investigated pertained to quantity and not the presence or absence of the treatment condition. We cannot discount, therefore, the existence of a point of diminishing returns in terms of the amount of PA and, consequently, how far the treatment and control conditions we studied are located from that optimal amount.

A second thesis we feel compelled to argue here is the general validity of conceptualising PA as a panacea. There may be a tendency towards over-expectation about the prospective effects of PA. PA is often presented as a solution for problems it may very well not be best suited to solve. Worse still, PA might be seen as a quick fix. Over-inflated expectations about the effects of PA may be distorting our view of its actual benefits, which may very well be more subtle and nuanced than previously thought. We propose that our findings challenge typical assumptions surrounding PA's effects, and caution should be exercised in presenting it as a universal solution.

Over the course of a single academic year, at least in the case of Year 4, our data suggest that daily PA exerts no measurable, statistically significant effects in the academic, physical and life satisfaction domains. In this sense, therefore, our findings essentially suggest that the effects of PA, taking into account its positive effects reported elsewhere in the scientific and academic literature, are more subtle and nuanced than one might expect. Furthermore, general assumptions concerning the efficacy of daily PA, just like those underpinning our own research study, should be kept in check. In this sense, failure to meet over-inflated expectations should not ultimately end up obscuring the actual, more subtle, benefits to be had. What the statistics do clearly show is that if the Maltese primary education system wishes to be a world leader in terms of steps taken *during school hours*, a daily PA programme will indeed serve that goal.

In conclusion, we present the following main findings:

A well-organised and synergistic project involving key stakeholders, including well-trained coaches collaborating closely with PE teachers, can qualitatively foster a positive experience for all involved. Educators reported perceived improvements in their students, including enhanced mood, attention span, and focus. Students themselves reported some instances of increased engagement in PA, enrolling in after-school programmes following encouragement from the coaches. The research study identifies the potential for well-coordinated, inclusive PA programmes to create a positive impact on the students' overall wellness and learning experience.

More specifically, we posit the following 5 findings:

FINDING 1 - A daily PA programme has no adverse effects on academic performance. The findings suggest that fear of adverse effects on performance in school due to PA or sport is likely unfounded, and formal initiatives aimed at deconstructing said fear are warranted.

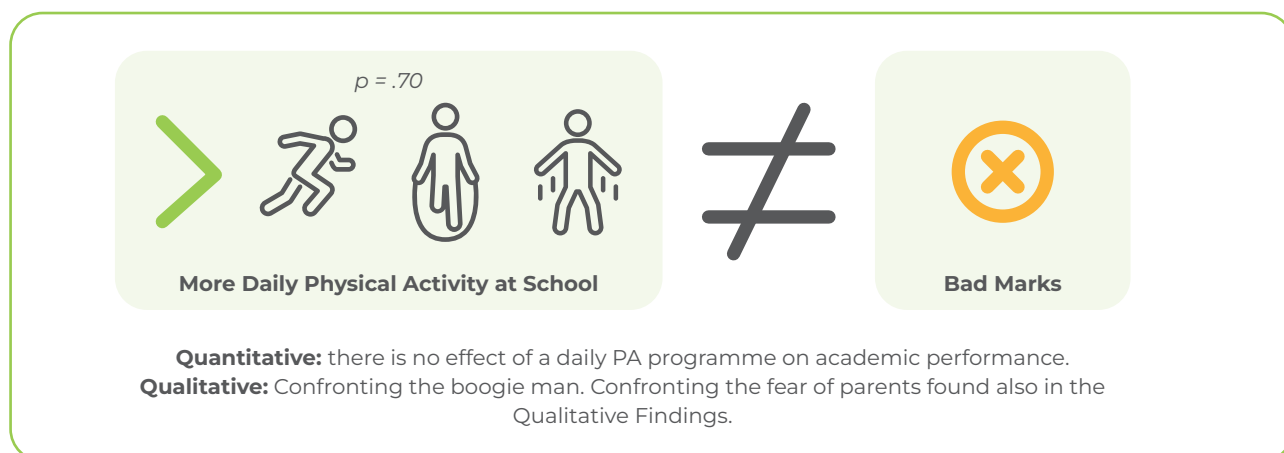


Figure 32 - Visual representation for Finding 1

FINDING 2 - Providing daily PA sessions in schools makes the difference between Maltese schools ranking among the highest or lowest in terms of overall steps taken during school hours, compared to known standards reported elsewhere in Europe and further afield.

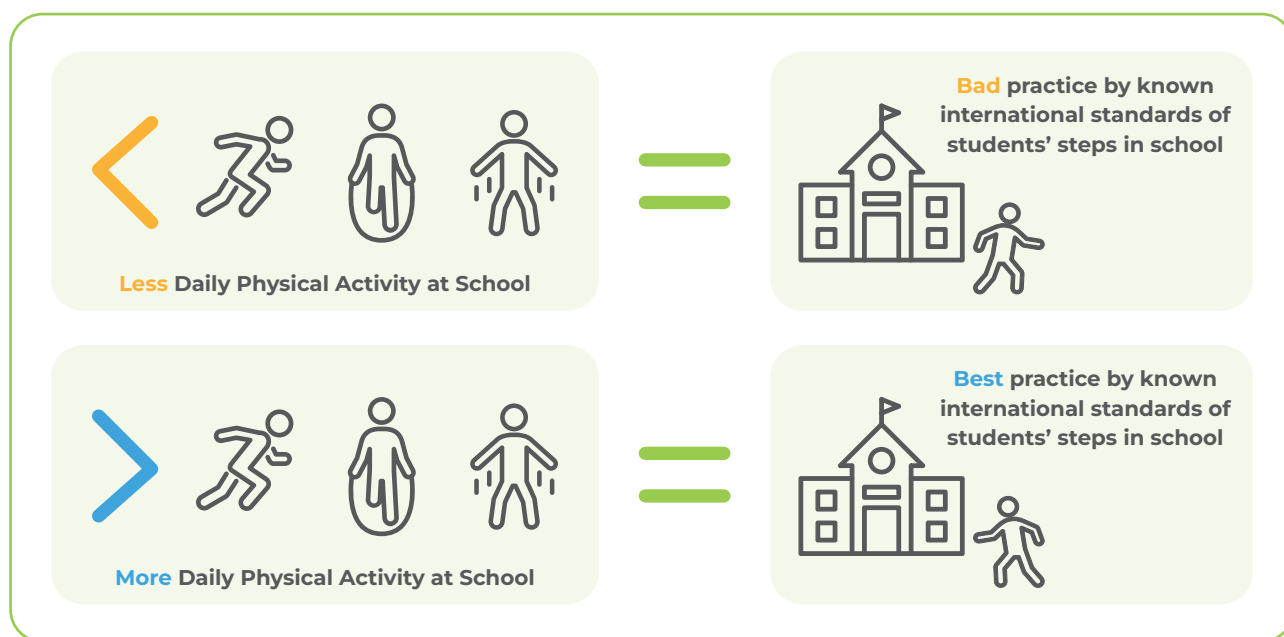


Figure 33 - Visual representation for Finding 2

FINDING 3 - Students who engage in daily structured PA sessions in Maltese schools at Year 4 take, on average, 1,597 (38%) more steps during school hours than those who do not.



Figure 34 - Visual representation for Finding 3

FINDING 4 - During Phase 1, concerns, at varying degrees, were raised by some of the stakeholders, particularly parents and educators. SLT members were doubtful about the logistical implementation of the FF5 programme. Subsequently, educators were primarily worried about their ability to cover the necessary academic content and topics. Similarly, parents also voiced concerns regarding whether educators would be able to meet academic goals. These concerns were indicative of a sense of uncertainty. Conversely, by the end of Phase 3, the findings suggest that this uncertainty had subsided as stakeholders provided positive feedback, highlighting that the initial concerns had been addressed throughout the scholastic year. The class teachers, however, raised concerns about the coverage of content at the end of the programme, suggesting that providing additional support and possibly reducing content would address the issue.

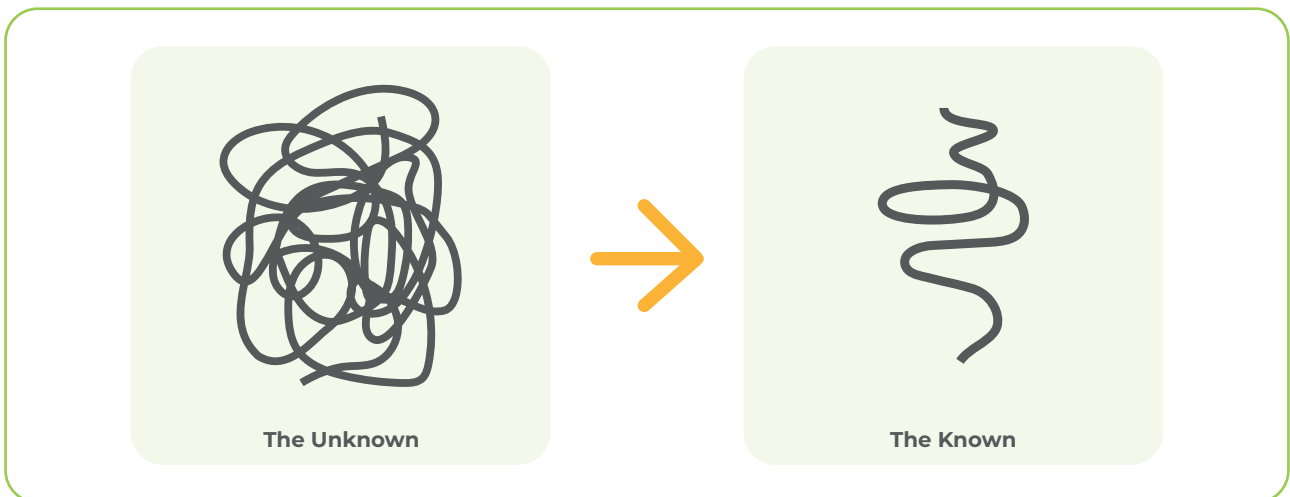


Figure 35 - Visual representation for Finding 4

FINDING 5 - The interdependence of the four dimensions is crucial. The findings suggest that it is imperative to recognise that these dimensions, although not explicitly integrated into the FF5 programme's core framework, are indispensable for a holistic grasp of the programme's potential for adoption and replication in comparable settings.

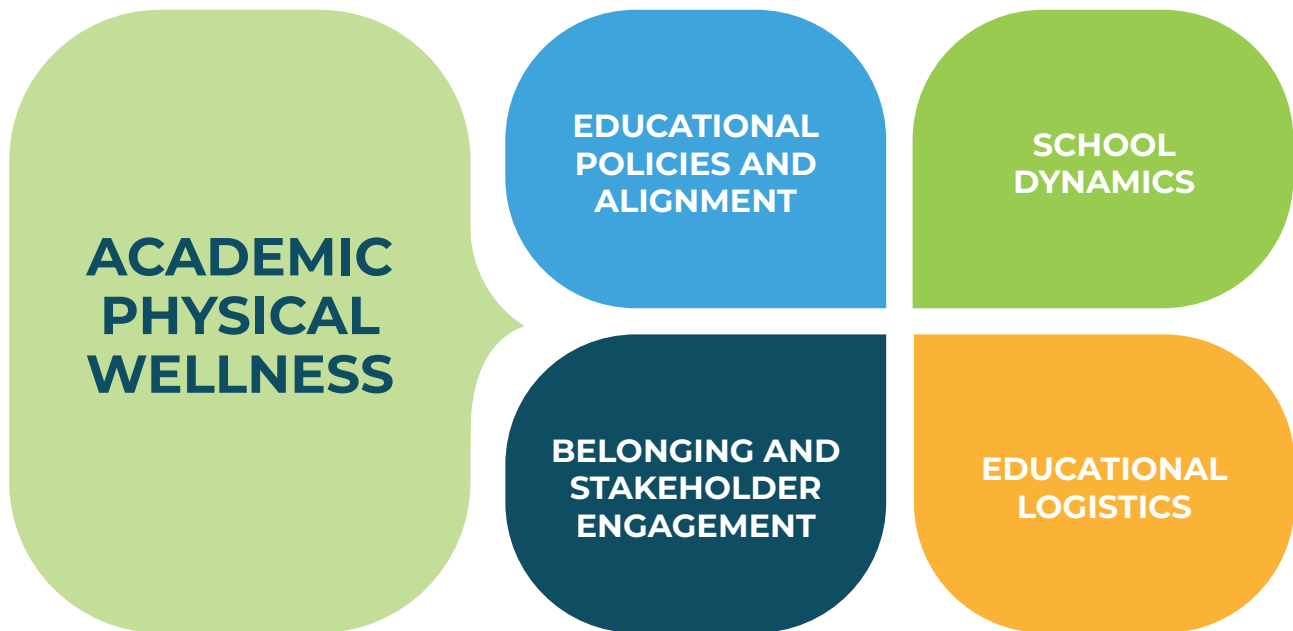


Figure 36 - Visual representation for Finding 5

FINDING 6 - Upon the conclusion of the FF5 programme, participants were requested to summarise their experiences and perceptions of the programme, using just three words. The resultant expressions have been visually represented in the word cloud, providing a snapshot of the sentiments and descriptions provided.



Figure 37 - Visual representation for Finding 6



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APPENDICES

APPENDIX 1 – ACADEMIC DOMAIN INSTRUMENTATION SAMPLE (MALTESE)

Index Number

Immarka t-tweġiba t-tajba billi tagħmel ✓ fil-kaxxa.

1. *Is-Sibt li għadda morna _____ Kemmuna.*

	ma'
	ta'
	sa

2. *Agħzel il-kelma t-tajba biex tiffirma mistoqsija.*

_____ hi dik il-mara li tinsab fuq wara tas-sala?

	Kif
	Min
	Meta

AQRA DAN L-INVIT U WIEĠEB IL-MISTOQSJIET.

Martin,

Nixtieq nistiednek għall-festin ta' għeluq snini. Dan se jsir fi Ġnien Hal Babu nhar is-Sibt 13 ta' Jannar fis-siegħa u nofs. Hu ħsieb li tilbes sew u tinsieħ iġġib umbrella miegħek!

Dejjem tiegħek,
Jake



3. *Fejn se jsir dan il-festin?*

	¶dejn il-baħar.
	Fil-kampanja.
	Ġo sala.

4. *Il-festin se jsir:*

	filgħodu.
	waranofsinhar.
	filgħaxija.

5. *Kif taħseb li se tkun il-ġurnata dakinhar tal-festin?*

	Xemxija u sabiħa.
	Sajfija u b'arja sħuna.
	Kiesħa u b'cans ta' xita.

Part of the bespoke Academic Test (Maltese)

APPENDIX 2 – PHYSICAL DOMAIN INSTRUMENTATION SAMPLE

Skill	Materials	Directions	Performance Criteria	Trial 1 Trial 2 Score
6. Slide	A minimum of 25 feet (7.6m) of clear space, a straight line and 2 cones or markers.	Place the two cones 25 feet apart on a straight line. Tell the child to slide from one cone to the other cone. Let the child decide which direction to slide in first. Ask the child to slide back to the starting point. Repeat a second trial.	<p>1. Body is turned sideways so shoulders remain aligned with the line on the floor.</p> <p>2. A step sideways with the lead foot followed by a slide with the trailing foot where both feet come off the surface briefly.</p> <p>3. Four continuous slides to the preferred side.</p> <p>4. Four continuous slides to the non-preferred side.</p>	
				Skill Score:
				TOTAL LOCOMOTOR SUBTEST SCORE****:

OBJECT CONTROL SUBTEST

Skill	Materials	Directions	Performance Criteria	Trial 1 Trial 2 Score
1. Two- Hand Strike of a Stationary Ball	4 inch (10.2cm) plastic ball, plastic bat, and a batting tee or other device to hold ball stationary.	Place ball on batting tee at child's waist level. Tell child to hit the ball hard straight ahead. Point toward straight ahead. Repeat a second trial.	<p>1. Child's preferred hand grips bat above non-preferred hand.</p> <p>2. Child's non-preferred hip/shoulder faces in direction of straight ahead.</p> <p>3. Hip and shoulder rotate and derotate during swing.</p> <p>4. Steps toward ball with non-preferred foot. 5. Hits ball sending it straight ahead.</p>	
				Skill Score:

Part of the TGMD-3 Form for Collecting Norms

Ulrich, A. (2013). *The Test of Gross Motor Development-3 (TGMD-3): Administration, Scoring, & International Norms*. Hacettepe Journal of Sport Sciences, 24(2), 35–41.



APPENDIX 3 – WELLNESS DOMAIN INSTRUMENTATION SAMPLE

Multidimensional Students' Life Satisfaction Scale (MSLSS)

Student: _____

Date: _____

Teacher: _____

Instructions: We would like to know what thoughts about life you've had during the past several weeks. Think about how you spend each day and night, and then think about how your life has been during most of this time. Here are some questions that ask you to indicate your satisfaction with life. In answering each statement, circle a number from **1** to **6**, where **1** indicates you **strongly disagree** with the statement and **6** indicates you **strongly agree** with the statement.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
		2	3	4	5	6
2. I am fun to be around.	1	2	3	4	5	6
3. I feel bad at school.*	1	2	3	4	5	6
4. I have a bad time with my friends.*	1	2	3	4	5	6
5. There are lots of things I can do well.	1	2	3	4	5	6
6. I learn a lot at school.	1	2	3	4	5	6
7. I like spending time with my parents.	1	2	3	4	5	6
8. My family is better than most.	1	2	3	4	5	6
9. There are many things about school I don't like.*	1	2	3	4	5	6
10. I think I am good-looking.	1	2	3	4	5	6
11. My friends are great.	1	2	3	4	5	6
12. My friends will help me if I need it.	1	2	3	4	5	6
13. I wish I didn't have to go to school.*	1	2	3	4	5	6
14. I like myself	1	2	3	4	5	6
15. There are lots of fun things to do where I live.	1	2	3	4	5	6
16. My friends treat me well.	1	2	3	4	5	6
17. Most people like me.	1	2	3	4	5	6
18. My family gets along well together.	1	2	3	4	5	6
19. I look forward to going to school.	1	2	3	4	5	6

(continued)

Multidimensional Students' Life Satisfaction Scale (MSLSS)

Saldo, M. (2016). *Promoting Student Happiness: Positive Psychology Interventions in Schools*. The Guilford Press.

FUNFIT 5

The Fun Fit 5 Research Project which was supported by the Malta FA and the Malta College of Arts, Science and Technology mainly focused on the Fun Fit 5 project which was a project proposing daily physical activity in schools, and which was the brainchild of the Malta FA.



The research team & authors of this report: Dr Matthew Muscat-Inglott, Heathcliff Schembri, Dr Renzo Kerr-Cumbo, Dr Melanie Darmanin

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