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The Impact of Different Levels of Typical School Provision of Physical Education, Physical Activity and Sports on Adolescent Physical Activity Behaviors, Health and Wellbeing

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Abstract: Objective: The aim of this study was to investigate the impact of different levels of typical school provision of physical education, physical activity and sports on the physical activity behaviors, health and wellbeing of Irish adolescents (13–14 years). Methods: A cross-sectional sample (n = 795) of adolescents (age: 14.28 ± 0.45), enrolled at schools that are representative of higher (n = 7), moderate (n = 6) and lower (n = 7) levels of a typical school provision of physical education, physical activity and sports was included. A physical activity behaviors, health and wellbeing questionnaire with established test–retest reliability was utilized to measure the variation in physical activity behaviors, health and wellbeing. Results: Data analysis indicated a significant variation in the levels of physical activity behaviors and health across different levels of typical school provision of physical education, physical activity and sports. The evidence was reported both as unadjusted group level analysis and adjusted covariate analysis. Favorable outcomes for higher levels of typical school provision were found for physical activity participation, body mass index, social support from peers to participate in physical activity and enjoyment of physical education for girls and somatic health complaints and enjoyment of physical education for boys. Conclusions: The findings stemming from this inquiry enable schools to optimize their environments for health promotion and, thus, further enhance their contribution to public health policy.

Keywords: physical education; physical activity; sports; youth; wellbeing; health

Citation: Rocliffe, P.; O' Keeffe, B.T.; Sherwin, I.; Mannix-McNamara, P.; MacDonncha, C. The Impact of Different Levels of Typical School Provision of Physical Education, Physical Activity and Sports on Adolescent Physical Activity Behaviors, Health and Wellbeing. *Youth* **2023**, *3*, 1330–1362. https://doi.org/10.3390/youth3040084

Academic Editors: Efstathios Christodoulides, Olia Tsivitanidou and Wouter Cools

Received: 31 October 2023
Revised: 13 November 2023
Accepted: 21 November 2023
Published: 29 November 2023

1. Introduction

Despite accumulating evidence regarding the health-enhancing properties associated with regular engagement in physical activity [1–4], 81% of adolescents worldwide remain insufficiently active [5,6]. Although the World Health Organization recommends at least an average of sixty minutes of moderate to vigorous physical activity daily across the week for adolescents [7], age-related declines in physical activity participation are frequent findings in the literature [8,9]. Furthermore, physical inactivity acts as a proxy for ill-health and wellbeing that track from adolescence into adulthood, with the expected costs of physical inactivity forecast to reach USD 300 billion by 2030 [10]. Nationally, the prevalence of physical inactivity in the Republic of Ireland is high, with 90% of adolescents failing to reach the World Health Organization's physical activity recommendations [11]. Consequently, school environments have been promoted as key facilitators for enhancing physical activity levels in parallel with improving and maintaining the health and wellbeing of adolescents [12,13], the benefits of which are becoming evident in the literature [14–19].

In the context of the current study, "typical" "refers to what occurs in the majority of schools with no significant departure from the norm" [20] (p. 3) and reflects the response of schools to the national curriculum and relevant recommendations regarding adolescent physical activity and health. Provision is an all-encompassing term that underlies systems and structures involved in providing school physical education and opportunities for physical activity and sports. The breadth and depth of provision is often determined by the resource base and ethos of schools. The literature indicates support for individual components of typical school provision of physical education, physical activity and sports to increase adolescent physical activity levels and attitudes to physical activity engagement that may predict enhanced health and wellbeing, e.g., obesity, health-related physical fitness, depression and anxiety [16,17,21,22]. However, a paucity of evidence exists that examines the impact of both multicomponent, whole school and systems-based approaches to typical school provision and the impact of different levels of such approaches on indicators of health in adolescent populations. Although global policy is directed towards utilizing schools as ideal health-enhancing institutions via whole-school, systems-based approaches [23,24], it is noteworthy that much of the evidence base underpinning these policies is defined by intervention-based provision (i.e., not representative of typical school provision) [25,26].

The International Society for Physical Activity and Health's "Eight Investments that Work for Physical Activity" were established to support the World Health Organization's Global Action Plan for physical activity and advocates for a whole-school, systems-based approach to physical activity [24]. This initiative was launched to reduce physical inactivity by 10% in 2025 and defines whole-school, systems-based approaches as key investments in order to increase adolescent physical activity. Furthermore, whole-school, systems-based approaches to active schools in the Republic of Ireland are advocated via initiatives such as the Active School Flag that provide a framework to enable schools to be physically educated and physically active [27]. Considering that adolescents spend a significant proportion of their waking day in school, whole-school, systems-based approaches are considered a cost-effective method to provide maximal opportunities to participate in school-based physical activity via physical education, physical activity (extracurricular activities, active travel, recess and classroom breaks) and sports [24]. The current literature indicates that physical education builds a foundation to "acquire the skills, knowledge and dispositions necessary to be "wise consumers" of physical activity" and sport [28] (p. 3). Moreover, worldwide, a total of 97% of schools endorse compulsory typical physical education [29]. In the Republic of Ireland, typical physical education is compulsory in 92.5% of secondary schools [30]. Thus, considering the global emphasis placed on promoting typical school physical education and opportunities for physical activity and sports, a deeper understanding of the impact and benefits of different levels of typical school provision is required. Such insights would provide evidence for sustained investment in typical school provision or modification of existing provision to potentiate positive impacts. Furthermore, these data would enable schools to optimize environments for health promotion and, thus, further enhance their contribution to public health policy.

Physical activity participation is a key enabler of health indicators such as obesity and health-related physical fitness [31–33]. Obesity is described as "abnormal or excessive fat accumulation which may impair health" and is measured as greater than two standard deviations above the World Health Organization Growth Reference Median [34] (p. 1). Although a significant body of evidence indicates the preventability of obesity in adolescents, over 340 million adolescents worldwide and one in every five in the Republic of Ireland are considered overweight or obese [35,36]. Health-related physical fitness is underpinned by both health- and performance-related components, e.g., flexibility, muscular strength, cardiovascular fitness and speed [37,38]. The literature elucidates the predictive capacity between indicators of health-related physical fitness and reduced indicators of obesity [39,40]. The worldwide survey on physical education found health-related physical fitness to be the most significant theme in physical education [29]. However, a dearth of evidence exists that indicates the impact of typical school provision of physical education, physical activity and sports on adolescent health indicators such as health-related physical fitness and obesity. Additionally, adolescence is a critical period to examine the impact of typical school provision of physical education, physical activity and sports, as behaviors adopted during this period are likely to track into adulthood [41,42].

Physical activity participation is also a key enabler of positive psychological indicators such as wellbeing [43]. Wellbeing is considered one's experience of positive emotions and overall psychological functioning that is optimal for engaging in daily activities [44]. There is a body of evidence to support the impact of physical activity outside of school on positive mental health outcomes, such as wellbeing [45–48]. Additionally, evidence supports the hypothesis that higher levels of wellbeing are associated with lower negative mental health outcomes, including anxiety and depression [47]. The prevalence of depression and anxiety disorders both rank in the top four leading causes of disease worldwide, and depression is projected to be the leading risk factor for disability by 2030 [49,50]. Nationally, the Republic of Ireland has the fourth highest rate of depression in Europe for 15- to 24-year-old males, and the prevalence of anxiety disorders has doubled from 11% to 22% in adolescent populations [51,52]. Furthermore, the economic burden of depression worldwide is estimated to cost USD 9.9 billion [53]. Research has also found a strong correlation between decreasing physical activity levels in adolescent populations and the prevalence of depression and anxiety [51]. Considering the aforementioned prevalence of disease, further strategies need to be developed to measure the impact of alternative sources of physical activity as a supplement to physical activity outside of school. A paucity of evidence exists that examines the multicomponent impact of typical school provision of physical education, physical activity and sports as a source of immediate and accessible support to enhance adolescent health and wellbeing indicators [20,54].

Despite the worldwide adoption of policies to promote school physical education, physical activity and sports in parallel with significant investments, a gap in the literature exists that identifies the impact of different levels of typical school provision occurring on an ongoing basis in the majority of schools. The prevalence of adolescent physical inactivity, ill-health and wellbeing indicators are at an all-time high, which is reflective of annual worldwide health costs associated with physical inactivity of USD 27 billion [10]. Therefore, the primary aim of this study is to investigate the impact of different levels of typical school provision of physical education, physical activity and sports on the physical activity behaviors, health and wellbeing of Irish adolescents. The findings from the current study will be translated to (1) provide schools with evidence to justify or modify typical school provision, (2) provide policy makers with evidence to justify or modify existing typical school provision to potentiate positive impacts and (3) provide an impetus for country comparison and benchmarking on key components of provision to optimize adolescent physical activity behaviors, health and wellbeing.

2. Materials and Methods

2.1. Participants

Research ethics approval for this study and the associated protocols was granted by the research ethics committee of the Faculty of Education and Health Sciences, University of Limerick, Republic of Ireland. In a previous study [30], a representative sample of 112 secondary schools (15% of the national total) were recruited via random stratified sampling based on school type (boys, girls, mixed), size (small < 300 pupils, medium 300–800 pupils, large <800 pupils), state demographic (Leinster, Munster, Connacht) and socioeconomic/DEIS status (school socioeconomic status in the Republic of Ireland is informed by a DEIS designation—Delivering Equality of Opportunities in Schools status). Schools were surveyed using a validated school physical education, physical activity and sports provision evaluation index [55] and ranked by levels of provision (i.e., higher, moderate, lower). Provision evaluation index variables pertained to a wide range of factors such as the personnel dedicated to provision, alignment with the curricular learning outcomes, accessibility and maintenance of facilities and equipment, availability of school sports teams and school budget, school ethos, advocating for active transport to schools and the development of partnerships to promote physical education, physical activity and sports. A composite provision score was calculated, whereby schools + 1 SD or greater were assigned as having higher levels of provision (n = 15 schools), schools within ±1 SD of the overall mean were designated as having moderate levels of provision (n = 79 schools) and schools—1 SD or less were assigned as having a lower level of provision (n = 18 schools). Subsequently, a purposeful sample of twenty secondary schools that were representative of higher (n = 7), moderate (n = 6) and lower (n = 7) levels of typical school provision of physical education, physical activity and sports were invited to participate in the current study between September 2022 and December 2022. Efforts were undertaken to preserve the representativeness of the sample (school size, type, state demographic and socioeconomic status/DEIS status) across all schools. Schools were representative of school type (13.7% girls; 12.3% boys; 74% mixed) and socioeconomic status/Delivering Equality of Opportunities in Schools status (26.9%). Efforts were made to match the schools across the three levels of provision (higher, moderate, lower) for school type, size, state demographic and socioeconomic/DEIS status. However, achieving a perfect balance between maintaining a practical sample size for data collection and matched representation across the groups proved unfeasible. All respondents (n = 795 adolescents; 54.3% male) remained anonymous and were provided with unique identifier codes. Demographic details obtained from the Department of Education database included school type, size and socioeconomic status in parallel with participant sex, age, year group, nationality and jurisdiction, e.g., rural or urban and are summarized in Table 1. Taking into consideration that the statistical analysis computed was ANCOVA between three groups with five covariates included, the post hoc power analysis determined that a sample size of at least 400 participants in total provided 95% power to detect a moderate effect size of eta-squared $\eta^2 = 0.25$ (difference between group means) at $p = 5\%$ level of significance.

Table 1. Characteristics of schools and participants (n = 795).

	Full Sample (n = 795)	**Male (n = 433)**	**Female (n = 362)**
Gender			
Male	54.3%		
Female	45.7%		
Age (±SD)	14.28 (±0.45)	14.31 (±0.48)	14.26 (±0.40)
Level of Provision			
Higher	34.1%	39.7%	27.3%
Moderate	29.6%	20.8%	40.1%
Lower	36.4%	39.5%	32.6%
School Type			
Boys	13.3%	24.5%	
Girls	12.7%		27.9%
Mixed	74%	75.5%	72.1%
School Type			
Single-Sex	26%	24.5%	27.9%
Mixed-Sex	74%	75.5%	72.1%
School Size			
Small (<300)	25.5%	23.3%	27.9%
Medium (300–800)	70.4%	69.1%	72.1%
Large (>800)	4%	7.4%	0%

Table 1. *Cont.*

	Full Sample (n = 795)	Male (n = 433)	Female (n = 362)
Socioeconomic Status			
DEIS	26.9%	30.5%	22.7%
Non-DEIS	73.1%	69.5%	77.3%
Nationality			
Republic of Ireland	84%	82.4%	85.9%
Outside of Ireland	16%	17.6%	14.1%
	(America, Brazil, United Kingdom, China, Germany, India, Italy, Latvia, Lithuania, Northern Ireland, Poland, Romania, Spain, Ukraine).	(America, Brazil, United Kingdom, China, Germany, India, Italy, Latvia, Lithuania, Northern Ireland, Poland, Spain, Ukraine).	(America, Brazil, China, Germany, Italy, Latvia, Lithuania, Poland, Romania, Spain, Ukraine).
Jurisdiction			
Urban	45%	40.6%	50.3%
Rural	55%	59.4%	49.7%
Physical Impairment Levels			
Some Difficulties	13.8%	11.1%	17.1%
No Difficulties	86.2%	88.9%	82.9%
Sickness in the Last 7 Days			
Yes	31.8%	29.1%	35.1%
No	68.2%	70.9%	64.9%

2.2. Procedure

The Irish education system encompasses three tiers: primary school (aged 5–12), secondary school (aged 12–18) and third-level institutes (18+). A total of 723 secondary schools are registered in the Republic of Ireland. An invitation to participate, outlining the aims and objectives of the study, was circulated to the school principals, and consent was obtained. Informed consent was received as follows:

1. Opt-out consent forms were sent to the parents of the participants via the school communication channels, which they were required to sign, should they not wish their adolescent to participate.

2. Informed consent was embedded in the PABHAW web link and was obtained by checking the appropriate box. All participating adolescents were required to check this box in order to participate.

The Physical Activity Behaviors, Health and Wellbeing (PABHAW) Questionnaire links were then distributed to the head physical education teachers, who administered the questionnaire via Qualtrics online software (https://www.qualtrics.com/core-xm/survey-software/) to the participants during timetabled physical education classes. The head physical education teachers conducted one familiarization trial of the PABHAW questionnaire and were given opportunities to engage with the lead researcher on the project regarding any clarifications that were needed. Participants were permitted to exit the physical activity PABHAW questionnaire web link at any point, should they have wished to depart the study. Data collection was conducted at each school on a specified day by the head physical education teacher. Nonresponse bias was minimized where possible, utilizing both a reminder email and a detailed standard operating procedure to the head physical education teachers 10 days in advance of administering the questionnaire. Participants were systematically encouraged and reminded to respond to every item within the PABHAW questionnaire (approx. 35 min duration) to mitigate the occurrence of unanswered questions and presence of missing values. For the purpose of clarity, a detailed description of each provision outcome is provided in Table 2.

Table 2. Description of the provision outcomes.

Provision Outcomes	Description
Physical Education	Includes teaching students a structured curriculum to help them acquire the skills, knowledge and dispositions necessary to be "wise consumers" of physical activity [28] (p. 3).
Physical Activity	Is any other bodily movement produced by skeletal muscle that results in energy expenditure related to the school setting **(not competitions)**, including active recess, active transport, active classroom breaks, extra-curricular physical activities, etc.
Sports	Involves participating in or preparing for school sports competitions.

2.3. *Physical Activity Behaviors, Health and Wellbeing Questionnaire Development*

The physical activity behaviors questionnaire consisted of three overarching constructs, physical activity, health and wellbeing, and was assembled using variables with established validity and reliability. The final draft of the PABHAW questionnaire was approved by the two lead authors (PR, CMD). The PABHAW questionnaire comprises multiple-choice, ordinal-scale and open-ended question types. A description of the PABHAW questionnaire including variables, score calculations, test–retest intraclass correlation coefficients, psychometrics and original sources is provided in Table 3. A comprehensive review of the PABHAW questionnaire item constructs and methodological underpinnings can be found in Rocliffe et al. [56].

Table 3. Description of the PABHAW questionnaire.

Variable Name	Description/Score Calculations	Test–Retest ICC	Validity and Internal Consistency	Sources
Physical Activity Behavior Variables		[56]		
PAQ-A	Physical Activity Questionnaire for Adolescents; eight items; five response categories; summed and divided by 8 to provide a single score that ranged from 1 to 5. Higher scores indicate greater physical activity participation over the last 7 days.	0.898	r = 0.39 α = 0.65; 0.67; 0.74 [57]	[58] (Adolescent Sample)
MVPA	PACE+ Questionnaire; 2 items; seven response categories; 0–7 days; summed and divided by 2 to provide a single score that ranged from 0 to 7. Higher scores indicate greater moderate to vigorous physical activity over the last 7 days.	0.887	r = 0.39 α = 0.88 [59,60]	[61] (Adolescent Sample)
Sedentary Behavior Weekday	Modified version of the Self-Administered Physical Activity Checklist and sedentary activity questions from the Determinants of Diet and Physical Activity Knowledge Hub (DEDIPAC); twelve items; seven response categories; 1 = "0 min per day", 7 = "about or more than 4 h per day"; summed and divided by 12 to provide a single score that ranged from 1 to 7. Higher scores indicate greater sedentary behavior on weekdays.	0.839	r = NA α = NA	[62–64] (Adolescent Sample)

Table 3. *Cont.*

Variable Name	Description/Score Calculations	Test–Retest ICC	Validity and Internal Consistency	Sources
Sedentary Behavior Weekend	Modified version of the Self-Administered Physical Activity Checklist and sedentary activity questions from the Determinants of Diet and Physical Activity Knowledge Hub (DEDIPAC); twelve items; seven response categories; 1 = "0 min per day", 7 = "about or more than 4 h per day"; summed and divided by 12 to provide a single score that ranged from 1 to 7. Higher scores indicate greater sedentary behavior at weekends.	0.820	r = NA α = NA	[62–64] (Adolescent Sample)
Overall Sedentary Behavior	Modified version of the Self-Administered Physical Activity Checklist and sedentary activity questions from the Determinants of Diet and Physical Activity Knowledge Hub (DEDIPAC); summed the mean sedentary behavior on weekdays score with the mean sedentary behavior on weekends score and divided by 2 to provide a single overall sedentary behavior score. Higher scores indicate greater overall sedentary behavior.	0.868	r = NA α = NA	[62–64] (Adolescent Sample)
Intention to be Physically Active	The Intention to be Physically Active Scale; 1 item; five response categories; 1 = "I am sure I will not be physically active", 5 = "I am sure I will be physically active". Higher scores indicate greater intentions to be physically active.	0.703	r = 0.32 α = NA [65]	[66] (Adolescent Sample)
Enjoyment of School	Enjoyment of School Scale; 1 item; five response categories; 1 = "disagree a lot", 5 = "agree a lot". Higher scores indicate greater enjoyment of school.	0.835	r = NA α = NA	Developed by the researcher
Enjoyment of Physical Education	Enjoyment of Physical Education Scale; 1 item; five response categories; 1 = "disagree a lot", 5 = "agree a lot". Higher scores indicate greater enjoyment of physical education.	0.879	r = 0.35 α = NA [67]	[68,69] (Adolescent Sample)
Social Support (PA with Friends)	Social Influences Scales; 3 items, two response categories; 1 = "No", 2 = "Yes"; summed to provide a single score that ranged from 3 to 6. Higher scores indicate greater engagement in physical activity with friends.	0.817	r = NA α = NA	[70,71] (Adolescent Sample)
Social Support (Peers)	Social Influences Scales; 4 items, five response categories; 1 = "None", 5 = "Everyday"; summed to provide a single score that ranged from 4 to 20. Item 1, "do you encourage your friends to do physical activities or play sports" was excluded from the analysis in line with standardized guidelines. Higher scores indicate greater social support from peers to engage in physical activity.	0.828	r = 0.35 α = 0.81 [72]	[70,71] (Adolescent Sample)
Social Support (Family)	Social Influences Scales; 5 items, five response categories; 1 = "None", 5 = "Everyday"; summed to provide a single score that ranged from 5 to 25. Higher scores indicate greater social support from family to engage in physical activity.	0.866	r = 0.31 α = 0.77 [72]	[70,71] (Adolescent Sample)
Self-Efficacy	Self-efficacy; eight items; five response categories; 1 = "disagree a lot", 5 = "agree a lot". Items were summed to provide a single score ranging from 5 to 40. Higher scores indicate greater self-efficacy.	0.866	Acceptable Validity α = 0.78 [73,74]	[65,70,71,73] (Adolescent Sample)

Table 3. *Cont.*

Variable Name	Description/Score Calculations	Test–Retest ICC	Validity and Internal Consistency	Sources
Perceived Physical Competence	Perceived physical competence was estimated using a modified subscale from the perceived competence scale for children. The participants were presented with 7 items, of which they chose which adolescent they were most like, e.g., "I do very well at all kinds of games and sports" versus "I don't feel that I am very good when it comes to games and sports". The participant then indicated if this statement was "really true for me" or "sort of true for me". Items were summed to provide a single score ranging from 7 to 28. Higher scores indicate greater perceived physical competence.	0.942	$r = -0.43$ $\alpha \geq 0.76$ [75,76]	[77] (Children and Adolescent Sample)
Health Variables				
BMI (kg/m^2)	Participants were furnished with a BMI protocol that instructed a parent/guardian to conduct anthropometric measures of the participants' height to the nearest 0.1 cm and weight to the nearest 0.1 kg at home using measuring tape and weighing scales three days prior to completing the PABHAW questionnaire. Participant weight (kg) was divided by height (m^2) to formulate a BMI score.	0.992	r = NA α = NA	[78]
General Fitness	International Fitness Scale; 1 item; five response categories; 1 = "very poor", 5 = very good". Higher scores indicate greater general fitness.	0.816	Good Validity $\alpha = 0.79$ [79]	[80] (Adolescent Sample)
Cardiovascular Fitness	International Fitness Scale; 1 item; five response categories; 1 = "very poor", 5 = very good". Higher scores indicate greater cardiovascular fitness.	0.704	Good Validity $\alpha = 0.73$ [79]	[80] (Adolescent Sample)
Muscular Strength	International Fitness Scale; 1 item; five response categories; 1 = "very poor", 5 = very good". Higher scores indicate greater muscular strength.	0.874	Good Validity $\alpha = 0.74$ [79]	[80] (Adolescent Sample)
Speed/Agility	International Fitness Scale; 1 item; five response categories; 1 = "very poor", 5 = very good". Higher scores indicate greater speed/agility.	0.788	Good Validity $\alpha = 0.76$ [79]	[80] (Adolescent Sample)
Flexibility	International Fitness Scale; 1 item; five response categories; 1 = "very poor", 5 = very good". Higher scores indicate greater flexibility.	0.623	Good Validity $\alpha = 0.73$ [79]	[80] (Adolescent Sample)
Somatic Health Complaints	The Health Behavior in School-Aged Children symptom checklist; 4 items; five response categories, 1 = "rarely or never", 5 = about everyday"; summed and divided by 4 to provide a single score that ranged from 1 (no symptoms at all) to 5 (maximum symptom load).	0.909	r = 0.44; 0.32 $\alpha = 0.73$ [81]	[82–84] (Adolescent Sample)
Psychological Health Complaints	The Health Behavior in School-Aged Children symptom checklist; 4 items; five response categories, 1 = "rarely or never", 5 = about everyday"; summed and divided by 4 to provide a single score that ranged from 1 (no symptoms at all) to 5 (maximum symptom load).	0.921	$r = 0.79$ $\alpha = 0.73$ [81,85]	[82–84] (Adolescent Sample)
Overall Health Complaints	The Health Behavior in School-Aged Children symptom checklist; 8 items; five response categories, 1 = "rarely or never", 5 = about everyday"; summed to provide a single score that ranged from 1 (no symptoms at all) to 32 (maximum symptom load).	0.975	$r = 0.46$; 0.39 $\alpha \geq 0.75$ [81,82]	[82–84] (Adolescent Sample)

Table 3. *Cont.*

Variable Name	Description/Score Calculations	Test–Retest ICC	Validity and Internal Consistency	Sources
Wellbeing Variables				
Wellbeing	Warwick–Edinburgh mental wellbeing 14-item scale; five response categories; 1 = "none of the time", 5 = "all of the time"; summed to provide a single score that ranged from 14 to 70. Higher scores indicate greater wellbeing.	0.876	r = 0.57; 0.65 α = 0.87 [86]	[87] (Student and Representative Population Sample)
Life Satisfaction	Cantril's Self-Anchoring Striving Scale uses a 0–10 ladder, with 10 for the best life and 0 for the worst. Scores $\geq$ 8 indicate thriving, 5–7 suggest struggling, and $\leq$4 indicate suffering.	0.974	r = 0.68 $\alpha \geq$ 0.58 [88,89]	[90] (Adolescent Sample)

Abbreviations: Physical Activity Questionnaire for Adolescents (PAQ-A), Moderate to Vigorous Physical Activity (MVPA), Meter (m), Kilograms (kg), NA (not available), r (validity), α (internal consistency).

Additional insights into the design properties of the PABHAW questionnaire were established via (a) expert stakeholder engagement and (b) a pilot study. The inclusion of the expert stakeholders (n = 12) was underpinned by their level of expertise in PABHAW and included head physical education teachers, experts in the field and relevant postgraduate students, assigned to a specific field of study included in the questionnaire (e.g., physical activity). The expert stakeholders examined the flow between survey items, recorded the time to completion, commented on difficult or unclear items and rated the clarity of the associated instructions and definitions on a 5-point Likert scale (1 = unclear, 5 = clear). Furthermore, the PABHAW questionnaire was piloted with a further 60 s year (13–14 years) adolescents (62% male). Following the same protocols for the expert stakeholders, the head physical education teacher recorded the average time to completion of the PABHAW questionnaire and dedicated time to engaging with the adolescents upon completion to record issues regarding the flow between items and clarity. Aligning with thresholds underpinned by [91], any clarity ratings below 3 for both the expert stakeholder engagement and pilot study were amended or were completely removed.

2.4. Preliminary Analysis

Prior to the current study, the PABHAW questionnaire was assessed for test–retest reliability by completing the questionnaire on two occasions (T1 and T2) on the same day, at the same time, one week apart, following identical procedures [56]. A cross-sectional, mixed sample of 55 participants (45.5% male, age, 13.94 ($\pm$0.40)) from three secondary schools located in the southern region of the Republic of Ireland were included. All outcome variables for the PABHAW questionnaire demonstrated acceptable reliability. Relative and absolute reliability indices were calculated. The combined mean coefficient of variation was minimally lower for girls (10.19%) in comparison to boys (13.01%). Similarly, the combined mean intraclass correlation coefficients were marginally higher for girls (>0.901) than boys (>0.822). A thorough examination of the data, including descriptives, relative and absolute reliability indices can be sourced in Rocliffe et al. [56].

2.5. Analysis

Responses (n = 795) were extracted from Qualtrics and uploaded to IBM Statistical Package for the Social Sciences 28 for analysis. Incomplete responses were identified and removed from the analysis (i.e., participants who did not answer 10% or more of the questionnaire items). Descriptive statistics were calculated for the measured variables according to levels (higher, moderate, lower) of typical school provision of physical education, physical activity and sports. Two approaches to statistical interpretation of the data were applied: (1) between-group level only and (2) between level adjusted for covariate influence. Analysis was gender-differentiated. Relevant assumption checks were applied for all analysis. However, due to the nature of the variables being a combination of continuous and categorical, and, thus, only partially meeting assumptions for parametric analysis, both parametric and nonparametric analysis were used to rigorously and comprehensively explore the data. Findings where there was agreement between the parametric and nonparametric analysis were considered the most pertinent for both sets of analyses.

The first approach examined between-group differences across the three levels of typical school provision of physical education, physical activity and sports. Relevant assumptions to conduct a one-way analysis of variance (ANOVA) were checked, including the nature of the variables, existence of outliers, normal data distribution and homogeneity of variance [92]. For variables that were continuous in nature, outliers above or below three standard deviation points were removed. For all variable types, Shapiro–Wilk test and Kolmogorov test were used to test for normality, and homogeneity of variance was examined via Levene's test of equal variances [93,94]. The assumption of normality and homogeneity of variance was not met in all variables; therefore, a nonparametric Kruskal–Wallis test was used to confirm the findings gleaned from the one-way ANOVA. Appropriate analysis to measure the effect size in the one-way ANOVA (eta squared) and Kruskal–Wallis (eta squared) [95] were taken, where a value of 0.01 to 0.06 was considered a small effect size, 0.06 to 0.14 was medium and 0.14 or higher was large [96]. Tukey post hoc (one-way ANOVA) and Dunn–Bonferroni (Kruskal–Wallis) analysis were utilized to illuminate significant differences that were common to both the one-way ANOVA and Kruskal–Wallis tests found among the three levels of provision [97]. Due to multiple comparison, a more conservative alpha level of $p < 0.01$ was set.

The second approach involved examining between-group differences but using an analysis of covariance (ANCOVA) model that included levels of provision as the fixed factor, the outcome variables as the dependent variable, and school type, school location, socioeconomic status, sickness in the last seven days and physical impairment levels as the covariates [98]. Similar to the one-way ANOVA analysis, assumptions were checked and were not consistently met across all variables; therefore, a nonparametric Quade's ANCOVA was used to confirm the findings of the ANCOVA. Appropriate analysis to measure the effect size of the ANCOVA (partial eta squared) and Quade's ANCOVA (eta squared) were taken, following the same thresholds as indicated for the group-level analysis. Pairwise comparison with Bonferroni correction (ANCOVA) and Dunn–Bonferroni (Quade's ANCOVA) analysis were utilized to illuminate significant differences that were common to both the ANCOVA and Quade's ANCOVA tests and found among the three levels of provision [97,99–101]. The alpha level was set at $p < 0.05$.

3. Results

Descriptive statistics for the levels of provision (higher, moderate and lower) according to the measured variables and gender are reported in Table 4. Tables 5–8 report the impact of different levels of typical school provision of physical education, physical activity and sports on different variables stemming from the PABHAW questionnaire. Parametric and nonparametric equivalent models investigated the significant differences for the measured variables across the different levels of provision. Group differences are found in Tables 5–8. Adjusted models that control for school type (single- and mixed-sex), school jurisdiction (rural and urban), socioeconomic status (DEIS and non-DEIS), sickness in the past seven days and physical impairment levels are included (Tables 7 and 8). Bar charts with 95% confidence intervals for each outcome variable of physical activity behaviors, health and wellbeing and levels provision are reported in Figures S1–S3 in the Supplementary Materials, included in this manuscript.

Table 4. Descriptive statistics for the physical activity behaviors, health and wellbeing variables by levels of provision and gender (Mean ± SD).

	Male (n = 433)			Female (n = 362)		
	Higher Provision (n = 172)	**Moderate Provision (n = 90)**	**Lower Provision (n = 171)**	**Higher Provision (n = 99)**	**Moderate Provision (n = 145)**	**Lower Provision (n = 118)**
Physical Activity Behavior Variables						
PAQ-A	2.88 (0.67)	2.73 (0.77)	2.69 (0.67)	2.64 (0.62)	2.54 (0.56)	2.30 (0.63)
MVPA	5.34 (1.88)	4.83 (2.09)	4.90 (1.92)	4.79 (1.56)	4.60 (1.53)	4.15 (1.77)
Sedentary Behavior Weekday	2.89 (0.58)	3.00 (0.78)	3.01 (0.67)	3.10 (0.60)	3.14 (0.57)	3.00 (0.59)
Sedentary Behavior Weekend	2.89 (0.62)	2.89 (0.84)	2.93 (0.68)	3.09 (0.55)	3.08 (0.54)	3.00 (0.61)
Overall Sedentary Behavior	2.88 (0.55)	2.94 (0.78)	2.95 (0.58)	3.09 (0.54)	3.12 (0.53)	3.00 (0.56)
Intention to be Physically Active	3.64 (1.08)	3.63 (1.19)	3.58 (1.09)	3.45 (0.99)	3.48 (0.98)	3.31 (1.02)
Enjoyment of School	2.81 (1.24)	2.51 (1.29)	2.55 (1.14)	2.90 (1.30)	2.57 (1.20)	2.60 (1.30)
Enjoyment of Physical Education	4.36 (0.98)	3.79 (1.21)	4.16 (1.07)	3.91 (1.21)	3.46 (1.25)	3.32 (1.34)
Social Support (PA with Friends)	4.75 (0.86)	4.91 (1.01)	4.96 (0.97)	5.04 (0.75)	4.84 (0.88)	4.76 (0.88)
Social Support (Peers)	8.48 (2.73)	7.70 (3.15)	7.91 (2.90)	8.61 (2.87)	7.72 (2.51)	7.19 (2.81)
Social Support (Family)	13.52 (4.63)	12.79 (4.77)	13.92 (4.81)	14.28 (4.17)	14.68 (4.37)	13.30 (5.14)
Self-Efficacy	28.77 (7.08)	26.48 (8.98)	28.75 (7.48)	27.89 (6.82)	27.66 (6.50)	24.51 (8.49)
Perceived Physical Competence	18.77 (5.69)	19.06 (6.22)	19.60 (5.65)	17.68 (6.06)	18.31 (5.70)	15.98 (5.79)
Health Variables						
Height (m)	1.69 (0.09)	1.70 (0.14)	1.69 (0.13)	1.66 (0.07)	1.64 (0.13)	1.62 (0.13)
Weight (kg)	58.98 (11.03)	59.54 (11.73)	61.47 (13.82)	54.87 (11.00)	53.09 (12.35)	56.22 (11.26)
BMI (kg/m^2)	20.45 (3.11)	20.61 (3.15)	21.31 (4.24)	19.55 (2.99)	19.79 (3.85)	21.30 (3.81)
General Fitness	3.73 (0.99)	3.86 (1.00)	3.60 (0.99)	3.67 (0.92)	3.61 (0.98)	3.37 (1.05)
Cardiovascular Fitness	3.45 (0.99)	3.51 (1.05)	3.44 (1.00)	3.27 (0.98)	3.31 (1.08)	3.03 (1.04)
Muscular Strength	3.47 (0.95)	3.70 (0.98)	3.55 (0.88)	3.36 (0.87)	3.30 (0.93)	3.15 (1.00)
Speed/Agility	3.70 (0.99)	3.84 (0.97)	3.60 (0.98)	3.54 (0.88)	3.61 (0.95)	3.31 (1.05)
Flexibility	3.05 (1.06)	3.12 (0.98)	3.04 (1.02)	3.24 (1.12)	3.21 (1.06)	3.03 (1.09)
Somatic Health Complaints	0.83 (0.71)	0.89 (0.92)	1.18 (0.83)	1.50 (1.06)	1.64 (0.99)	1.63 (1.00)
Psychological Health Complaints	1.36 (0.99)	1.41 (1.18)	1.38 (1.02)	2.01 (1.18)	2.20 (1.08)	2.08 (1.16)
Overall Health Complaints	8.63 (6.03)	9.13 (7.27)	10.28 (6.65)	13.17 (7.54)	15.36 (7.34)	14.83 (7.86)
Wellbeing Variables						
Wellbeing	48.34 (7.59)	48.28 (9.41)	48.20 (8.73)	45.09 (9.73)	42.54 (9.26)	42.54 (10.05)
Life Satisfaction	75.94 (17.51)	72.32 (20.85)	72.46 (21.72)	70.06 (20.49)	63.63 (23.61)	60.53 (25.17)
Covariates						
Socioeconomic Status (One is "yes", Two is "no",)	1.64 (0.48)	1.91 (0.27)	1.64 (0.48)	1.82 (0.39)	1.94 (0.24)	1.53 (0.50)
School Location (Urban is "One", Rural is "Two")	1.73 (0.45)	1.59 (0.50)	1.46 (0.50)	1.72 (0.45)	1.47 (0.50)	1.35 (0.48)
School Type (Single is "One", Mixed is "Two")	1.65 (0.47)	2.00 (0.00)	1.72 (0.44)	1.80 (0.39)	1.59 (0.49)	1.80 (0.39)

Table 4. *Cont.*

	Male (n = 433)			Female (n = 362)		
	Higher Provision (n = 172)	**Moderate Provision (n = 90)**	**Lower Provision (n = 171)**	**Higher Provision (n = 99)**	**Moderate Provision (n = 145)**	**Lower Provision (n = 118)**
Physical Impairment Levels (Reverse, i.e., closer to 4 is no impairments)	3.91 (0.29)	3.88 (0.33)	3.88 (0.33)	3.87 (0.34)	3.86 (0.35)	3.76 (0.43)
Item 9 Sickness (No is "Zero", Yes is "One")	0.32 (0.47)	0.24 (0.43)	0.29 (0.45)	0.44 (0.50)	0.30 (0.46)	0.33 (0.47)

Abbreviations: Physical Activity Questionnaire for Adolescents (PAQ-A), Moderate to Vigorous Physical Activity (MVPA), Body Mass Index (BMI), Meter (m), Kilograms (kg).

Table 5. Significant differences and effect sizes among different levels of typical school provision of physical education, physical activity and sports and the physical activity behaviors, health and wellbeing variables for males and females.

	Male (n = 433)				Female (n = 362)			
	Physical Education, Physical Activity and Sports Provision				**Physical Education, Physical Activity and Sports Provision**			
Physical Activity Behavior Variables	**One-Way Anova (*p*)**	**Eta Squared (η^2)**	**Kruskal-Wallis (*p*)**	**Eta Squared (η^2)**	**One-Way Anova (*p*)**	**Eta Squared (η^2)**	**Kruskal-Wallis (*p*)**	**Eta Squared (η^2)**
PAQ-A	0.029	0.016	0.021	0.013	<0.001 ⁺	0.051	<0.001 ⁺	0.043
MVPA	0.051	0.014	0.048	0.009	0.011	0.025	0.013	0.019
Sedentary Behavior Weekday	0.220	0.007	0.404	0.000	0.158	0.010	0.186	0.004
Sedentary Behavior Weekend	0.785	0.001	0.845	−0.003	0.377	0.005	0.281	0.002
Overall Sedentary Behavior	0.549	0.003	0.641	−0.003	0.238	0.008	0.197	0.003
Intention to be Physically Active	0.865	0.001	0.800	−0.004	0.323	0.006	0.298	0.001
Enjoyment of School	0.073	0.012	0.078	0.007	0.107	0.012	0.113	0.007
Enjoyment of Physical Education	<0.001 ⁺	0.038	<0.001⁺	0.037	0.002 *	0.033	0.001 *	0.032
Social Support (PA with Friends)	0.152	0.009	0.048	0.009	0.050	0.017	0.069	0.009
Social Support (Peers)	0.065	0.013	0.056	0.009	<0.001⁺	0.040	<0.001⁺	0.034
Social Support (Family)	0.187	0.008	0.210	0.003	0.049	0.017	0.038	0.013
Self-Efficacy	0.044	0.014	0.132	−0.003	<0.001⁺	0.042	0.001*	0.031
Perceived Physical Competence	0.408	0.004	0.382	0.005	0.005 *	0.029	0.004 *	0.025
Health Variables								
Height	0.613	0.002	0.945	−0.004	0.062	0.017	0.019	0.016
Weight	0.180	0.009	0.302	0.006	0.126	0.013	0.054	0.011
BMI	0.090	0.012	0.376	0.000	0.001 *	0.043	<0.001⁺	0.035
General Fitness	0.126	0.010	0.143	0.004	0.052	0.017	0.066	0.007
Cardiovascular Fitness	0.845	0.001	0.904	−0.004	0.089	0.014	0.097	0.007
Muscular Strength	0.183	0.008	0.240	0.002	0.211	0.009	0.236	0.002
Speed/Agility	0.182	0.008	0.180	0.003	0.041	0.019	0.050	0.011
Flexibility	0.845	0.001	0.868	−0.004	0.274	0.008	0.335	0.001

Table 5. *Cont.*

	Male (n = 433)				**Female (n = 362)**			
	Physical Education, Physical Activity and Sports Provision				**Physical Education, Physical Activity and Sports Provision**			
Physical Activity Behavior Variables	**One-Way Anova (*p*)**	**Eta Squared (η^2)**	**Kruskal-Wallis (*p*)**	**Eta Squared (η^2)**	**One-Way Anova (*p*)**	**Eta Squared (η^2)**	**Kruskal-Wallis (*p*)**	**Eta Squared (η^2)**
Somatic Health Complaints	<0.001 $^+$	0.039	<0.001 $^+$	0.041	0.547	0.004	0.382	0.000
Psychological Health Complaints	0.883	0.001	0.999	−0.005	0.439	0.005	0.453	−0.001
Overall Health Complaints	0.065	0.013	0.054	0.009	0.100	0.014	0.107	0.007
Wellbeing Variables								
Wellbeing	0.989	0.000	0.991	−0.005	0.095	0.014	0.140	0.005
Life Satisfaction	0.214	0.007	0.472	−0.001	0.016	0.025	0.038	0.013
Covariates								
Socioeconomic Status (One is “yes”, Two is “no”,)	<0.001 $^+$	0.058	<0.001 $^+$	0.053	<0.001 $^+$	0.172	<0.001 $^+$	0.166
School Location (Urban is “One”, Rural is “Two”)	<0.001 $^+$	0.058	<0.001 $^+$	0.053	<0.001 $^+$	0.083	<0.001 $^+$	0.078
School Type (Single is “One”, Mixed is “Two”)	<0.001 $^+$	0.090	<0.001 $^+$	0.085	<0.001 $^+$	0.054	<0.001 $^+$	0.049
Physical Impairment Levels (Reverse, i.e., closer to 4 is no impairments)	0.633	0.002	0.632	−0.003	0.066	0.015	0.066	0.010
Item 9 Sickness (No is “Zero”, Yes is “One”)	0.440	0.004	0.439	0.000	0.066	0.015	0.066	0.010

Significance ($p < 0.01$); * Significance ($p < 0.001$); $^+$ η^2: 0.01: small effect size; 0.06: medium effect size; 0.14 or higher: large effect size. Abbreviations: Physical Activity Questionnaire for Adolescents (PAQ-A), Moderate to Vigorous Physical Activity (MVPA), Body Mass Index (BMI), Analysis of Variance (ANOVA).

Table 6. Post hoc analysis applied to one-way ANOVA (Tukey) and Kruskal–Wallis (Dunn–Bonferroni) test of significance between different levels of physical education, physical activity and sports provision and the physical activity behaviors, health and wellbeing variables for males and females.

	Male (n = 433)						**Female (n = 362)**					
	Higher Provision vs. Moderate Provision		**Moderate Provision vs. Lower Provision**		**Lower Provision vs. Higher Provision**		**Higher Provision vs. Moderate Provision**		**Moderate Provision vs. Lower Provision**		**Lower Provision vs. Higher Provision**	
Physical Activity Behavior Variables	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni
PAQ-A	NS	NS	NS	NS	NS	NS	NS	NS	**M > L**	**M > L**	**H > L**	**H > L**
Enjoyment of Physical Education	**H > M**	**H > M**	**L > M**	**L > M**	NS	NS	**H > M**	**H > M**	NS	NS	**H > L**	**H > L**
Social Support (Peers)	NS	NS	NS	NS	NS	NS	**H > M**	**H > M**	NS	NS	**H > L**	**H > L**
Self-Efficacy	NS	NS	NS	NS	NS	NS	NS	NS	**M > L**	**M > L**	**H > L**	**H > L**
Perceived Physical Competence	NS	NS	NS	NS	NS	NS	NS	NS	**M > L**	**M > L**	NS	NS

Table 6. *Cont.*

	Male (n = 433)						Female (n = 362)					
	Higher Provision vs. Moderate Provision		Moderate Provision vs. Lower Provision		Lower Provision vs. Higher Provision		Higher Provision vs. Moderate Provision		Moderate Provision vs. Lower Provision		Lower Provision vs. Higher Provision	
Physical Activity Behavior Variables	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni	Tukey	Dunn–Bonferroni
Health Variables												
BMI	NS	NS	NS	NS	NS	NS	NS	NS	**L > M**	**L > M**	**L > H**	**L > H**
Somatic Health Complaints	NS	NS	**L > M**	**L > M**	**L > H**	**L > H**	NS	NS	NS	NS	NS	NS
Covariates												
Socioeconomic Status (One is "yes", Two is "no",)	**M > H**	**M > H**	**M > L**	**M > L**	NS	NS	**M > H**	**M > H**	**M > L**	**M > L**	**H > L**	**H > L**
School Location (Urban is "One", Rural is "Two")	NS	NS	NS	NS	**H > L**	**H > L**	**H > M**	**H > M**	NS	NS	**H > L**	**H > L**
School Type (Single is "One", Mixed is "Two")	**M > H**	**M > H**	**M > L**	**M > L**	NS	NS	**H > M**	**H > M**	**L > M**	**L > M**	NS	NS

Abbreviations: Physical Activity Questionnaire for Adolescents (PAQ-A), Body Mass Index (BMI), Higher (H), Moderate (M), Lower (L), Not Significant (NS).

Table 7. Significant differences and effect sizes among different levels of physical education, physical activity and sports provision and the physical activity behaviors, health and wellbeing variables for males and females when controlling for covariates.

	Male (n = 433)				Female (n = 362)			
	PE, PA and Sports Provision				PE, PA and Sports Provision			
Physical Activity Behavior Variables	**One-Way Ancova (*p*)**	**Partial Eta Squared (η^2)**	**Quade's Ancova (*p*)**	**Eta Squared (η^2)**	**One-Way Ancova (*p*)**	**Partial Eta Squared (η^2)**	**Quade's Ancova (*p*)**	**Eta Squared (η^2)**
PAQ-A	0.162	0.009	0.179	0.008	0.024 *	0.021	0.047 *	0.017
MVPA	0.487	0.003	0.525	0.003	0.057	0.016	0.073	0.014
Sedentary Behavior Weekday	0.493	0.003	0.787	0.001	0.020 *	0.022	0.041 *	0.018
Sedentary Behavior Weekend	0.912	0.000	0.957	0.000	0.121	0.021	0.136	0.011
Overall Sedentary Behavior	0.855	0.001	0.919	0.000	0.041 *	0.018	0.051	0.016
Intention to be Physically Active	0.982	0.000	0.946	0.000	0.767	0.001	0.747	0.002
Enjoyment of School	0.032 *	0.016	0.056	0.013	0.082	0.014	0.135	0.011
Enjoyment of Physical Education	0.002 **	0.028	0.009 **	0.022	0.021 *	0.022	0.015 *	0.023
Social Support (PA with Friends)	0.103	0.011	0.046 *	0.014	0.172	0.010	0.275	0.007
Social Support (Peers)	0.214	0.007	0.240	0.007	0.011 *	0.025	0.015 *	0.023

Table 7. *Cont.*

	Male (n = 433)				Female (n = 362)			
	PE, PA and Sports Provision				PE, PA and Sports Provision			
Physical Activity Behavior Variables	**One-Way Ancova (*p*)**	**Partial Eta Squared (η^2)**	**Quade's Ancova (*p*)**	**Eta Squared (η^2)**	**One-Way Ancova (*p*)**	**Partial Eta Squared (η^2)**	**Quade's Ancova (*p*)**	**Eta Squared (η^2)**
Social Support (Family)	0.053	0.014	0.102	0.011	0.960	0.000	0.916	0.000
Self-Efficacy	0.118	0.010	0.280	0.006	0.086	0.014	0.215	0.009
Perceived Physical Competence	0.265	0.006	0.271	0.006	0.202	0.009	0.207	0.009
Health Variables								
Height	0.419	0.004	0.632	0.002	0.204	0.010	0.052	0.018
Weight	0.158	0.009	0.258	0.007	0.146	0.012	0.066	0.017
BMI	0.126	0.011	0.468	0.004	0.002 **	0.039	0.004 **	0.036
General Fitness	0.373	0.005	0.439	0.004	0.521	0.004	0.643	0.003
Cardiovascular Fitness	0.897	0.001	0.857	0.001	0.818	0.001	0.858	0.001
Muscular Strength	0.075	0.012	0.181	0.008	0.793	0.001	0.838	0.001
Speed/Agility	0.215	0.007	0.277	0.006	0.673	0.002	0.782	0.001
Flexibility	0.632	0.002	0.712	0.002	0.912	0.001	0.956	0.000
Somatic Health Complaints	<0.001 +	0.044	<0.001 +	0.055	0.092	0.014	0.070	0.015
Psychological Health Complaints	0.955	0.000	0.957	0.000	0.040 *	0.019	0.067	0.016
Overall Health Complaints	0.100	0.011	0.073	0.013	0.007 **	0.029	0.012 *	0.026
Wellbeing Variables								
Wellbeing	0.967	0.000	0.980	0.000	0.034 *	0.030	0.051	0.017
Life Satisfaction	0.274	0.006	0.665	0.002	0.063	0.017	0.122	0.013

Significance ($p < 0.05$); * Significance ($p < 0.01$); ** Significance ($p < 0.001$); + η^2: 0.01: small effect size; 0.06: medium effect size; 0.14 or higher: large effect size. Abbreviations: Physical Activity Questionnaire for Adolescents (PAQ-A), Moderate to Vigorous Physical Activity (MVPA), Body Mass Index (BMI), Analysis of Covariance (ANCOVA).

Table 8. Post hoc analysis applied to the one-way ANCOVA (Bonferroni) and Quade's Ancova (Dunn–Bonferroni) tests of significance between different levels of physical education, physical activity and sports provision and the physical activity behaviors, health and wellbeing variables for males and females.

	Male (n = 433)						Female (n = 362)					
	Higher Provision vs. Moderate Provision		**Moderate Provision vs. Lower Provision**		**Lower Provision vs. Higher Provision**		**Higher Provision vs. Moderate Provision**		**Moderate Provision vs. Lower Provision**		**Lower Provision vs. Higher Provision**	
Physical Activity Behavior Variables	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonfer-roni	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni
PAQ-A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**H > L**	**H > L**
Sedentary Behaviors Weekday	NS	NS	NS	NS	NS	NS	NS	NS	**M > L**	**M > L**	NS	NS

Table 8. *Cont.*

	Male (n = 433)						Female (n = 362)					
	Higher Provision vs. Moderate Provision		Moderate Provision vs. Lower Provision		Lower Provision vs. Higher Provision		Higher Provision vs. Moderate Provision		Moderate Provision vs. Lower Provision		Lower Provision vs. Higher Provision	
Physical Activity Behavior Variables	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni	Bonferroni	Dunn–Bonferroni
Enjoyment of Physical Education	**H >M**	**H > M**	NS	NS	NS	NS	**H > M**	**H > M**	NS	NS	NS	NS
Social Support (Peers)	NS	NS	NS	NS	NS	NS	**H > M**	**H > M**	NS	NS	**H > L**	**H > L**
Health Variables												
BMI	NS	NS	NS	NS	NS	NS	NS	NS	**L > M**	**L > M**	**L > H**	**L > H**
Somatic Health Complaints	NS	NS	**L > M**	**L > M**	**L > H**	**L > H**	NS	NS	NS	NS	NS	NS
Overall Health Complaints	NS	NS	NS	NS	NS	NS	**M > H**	**M > H**	**M > L**	**M > L**	NS	NS

Abbreviations: Physical Activity Questionnaire for Adolescents (PAQ-A), Body Mass Index (BMI), Higher (H), Moderate (M), Lower (L), Not Significant (NS).

3.1. Group-Level Analysis

Both the one-way ANOVA and nonparametric equivalent Kruskal–Wallis models found significant between-group differences for PAQ-A, enjoyment of physical education, social support from peers to participate in physical activity, body mass index (BMI), self-efficacy and perceived physical competence in girls ($p < 0.01$). Significant between-group differences for enjoyment of physical education and somatic health complaints were found in boys ($p < 0.01$). The effect size observed for the aforementioned outcome variables was small (ranging between 0.02 and 0.05). The most marked effects were for somatic health complaints in boys and PAQ-A and BMI in girls. The effects for the other outcome variables were similar but more moderate than somatic health complaints, PAQ-A and BMI. There was no agreement on the significant effects between the parametric and non-parametric models for the remaining outcome variables. Post hoc analysis demonstrated that girls in schools with moderate–higher levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (better) physical activity participation (PAQ-A) (p = < 0.001/<0.001; η^2 = 0.051/0.043) (parametric/nonparametric) and self-efficacy (p = <0.001/0.001; η^2 = 0.042/0.031) in comparison to girls in schools with lower levels of provision. Girls in schools with higher levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (better) enjoyment of physical education (p = 0.002/0.001; η^2 = 0.033/0.032) and social support from peers (p = < 0.001/<0.001; η^2 = 0.040/0.034) in comparison to girls in schools with moderate and lower levels of provision. Girls in schools with moderate levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (better) perceived physical competence (p = 0.005/0.004; η^2 = 0.029/0.025) in comparison to girls in schools with lower provision. Girls in schools with lower levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (worse) BMI (p = 0.001/<0.001; η^2 = 0.043/0.035) in comparison to girls in schools with moderate and higher levels of provision. Boys in schools with lower levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (worse) somatic health complaints (p = < 0.001/<0.001/η^2 = 0.039/0.041) in comparison to boys in schools with moderate and higher levels of provision. Boys in schools with higher and lower levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (better) enjoyment of physical education (p = <0.001/<0.001; η^2 = 0.038/0.047) in comparison to boys in schools with moderate provision.

3.2. Impact of Covariates on Group Differences (Covariate Analysis)

Both the analysis of covariance (ANCOVA) and nonparametric equivalent Quade's ANCOVA models found significant between-group differences that were consistent with the one-Way ANOVA and Kruskal–Wallis tests for PAQ-A, enjoyment of physical education, social support from peers to participate in physical activity and BMI in girls and for enjoyment of physical education and somatic health complaints in boys ($p < 0.05$). Additionally, the parametric and nonparametric models found significant differences for sedentary behavior on weekdays and overall health complaints that were not consistent with the one-Way ANOVA and Kruskal–Wallis tests. Significant differences for perceived physical competence and self-efficacy found at the group-level analysis were not found once the covariates were adjusted for. The effect size observed for the aforementioned outcome variables was smaller after adjusting for covariates (ranging between 0.01 and 0.04). Once again, the most marked effects were for somatic health complaints in boys and PAQ-A and BMI in girls. The effects for the other outcome variables were similar and more moderate than somatic health complaints, PAQ-A and BMI. There was no agreement on the significant effects between the parametric and nonparametric models for the remaining outcome variables.

Post hoc analysis indicated that girls in schools with higher levels of typical school provision of physical education, physical activity and sports (higher and moderate in group analysis) were significantly more likely to have higher (better) physical activity participation (PAQ-A) (p = 0.024/0.047; η^2 = 0.021/0.011) (parametric/nonparametric) in comparison to girls in schools with lower levels of provision. Girls in schools with higher levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (better) enjoyment of physical education (p = 0.021/0.015/; η^2 = 0.022/0.018) in comparison to girls in schools with moderate levels of provision (moderate and lower in group analysis). Girls in schools with higher levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (better) social support from peers (p = 0.011/0.015; η^2 = 0.025/0.018) in comparison to girls in schools with moderate and lower levels of provision. Girls in schools with lower levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (worse) BMI (p = 0.002/0.004; η^2 = 0.039/0.029) in comparison to girls in schools with moderate and higher levels of provision. Boys in schools with lower levels of typical school provision of physical education, physical activity and sports were significantly more likely to have higher (worse) somatic health complaints (p = <0.001/<0.001; η^2 = 0.011/0.008) in comparison to boys in schools with moderate and higher levels of provision. Boys in schools with higher levels of typical school provision of physical education, physical activity and sports (higher and lower in group analysis) were significantly more likely to have higher (better) enjoyment of physical education (p = 0.002/0.009; η^2 = 0.028/0.017) in comparison to boys in schools with moderate provision.

Girls in schools with moderate levels of physical education, physical activity and sports provision had significantly higher (worse) sedentary behavior on weekdays (p = 0.020/0.041; η^2 = 0.022/0.012) in comparison to girls in schools with lower levels of provision. Girls in schools with moderate levels of physical education, physical activity and sports provision were significantly more likely to have higher (worse) overall health complaints (p = 0.007/0.012; η^2 = 0.029/0.020) in comparison to girls in schools with higher and lower levels of provision.

4. Discussion

Extant research demonstrates physical activity as a strong predictor of future health and wellbeing [38,41,45,102]. Evidence-based insights into the impact of different levels of typical school provision of physical education, physical activity and sports on the physical activity behaviors, health and wellbeing of adolescents may further enable schools to optimize environments for health promotion and, thus, further enhance their contribution to public health policy. The provision evaluation index, developed in a previous study [55], was utilized to measure different levels of typical school provision of physical education, physical activity and sports [30]. Provision evaluation index variables pertained to a wide range of factors such as the personnel dedicated to provision, alignment with the curricular learning outcomes, accessibility and maintenance of facilities and equipment, availability of school sports teams and school budget, school ethos, advocating for active transport to schools and the development of partnerships to promote physical education, physical activity and sports. This breadth of factors recognizes that a whole-school, systems-based approach to typical school provision of physical education, physical activity and sports in schools may have beneficial impacts on adolescent physical activity levels [23,24,27]. To date, a dearth of research exists that operationalizes and examines the multicomponent impact of different levels of typical school provision of physical education, physical activity and sports on adolescent health. Therefore, where possible, key findings gleaned from the current study on the combined impact of different levels of typical school provision of physical education, physical activity and sports (i.e., higher, moderate, lower) on components of adolescent physical activity behaviors, health and wellbeing will be placed within the existing body of research that investigates the impact of individual components of provision (e.g., participation, budget, facilities and equipment). The discussion places emphasis on significant between-group differences that are maintained after the introduction of covariates, supported by both parametric and nonparametric analysis. The current study revealed that higher levels of typical school provision of physical education, physical activity and sports may significantly impact adolescent physical activity behaviors and health, with particularly favorable outcomes for girls.

4.1. Physical Activity Behaviors

4.1.1. Physical Activity Participation

For physical activity participation (PAQ-A), the findings of the current study demonstrated significant between-group differences (i.e., higher vs. lower provision) that are maintained after the introduction of covariates. Girls in schools characterized as having higher levels of typical school provision of physical education, physical activity and sports were found to have higher levels of physical activity participation in comparison to schools with lower levels of provision. This finding is consistent with research that considers the impact of whole-school, systems-based approaches to promoting physical activity, i.e., mobilizes the combined potential impact that typical school provision of physical education, physical activity and sports may have on physical activity participation in girls [20,24,103–107]. Research pertaining to the impact of individual components of typical school provision of physical education, physical activity and sports, such as participation in physical education class versus nonparticipation [103,104], >60 min of recess time [103], a policy mandating at least 30 min of moderate to vigorous physical activity (MVPA) during school time [107], active transport to school [105] and >90 min of physical education class time [106] are all associated with greater physical activity participation in girls, reduced sedentary behavior and a higher proportion of girls meeting the physical activity recommendations of at least an average of sixty minutes of moderate to vigorous physical activity daily across the week [7]. Furthermore, it is acknowledged that adolescents who are enrolled in physical education classes may impact the participation in school sports [108]. It is noteworthy that an age-related decline in physical activity participation is a consistent finding in the literature, especially in girls [109,110]. Therefore, “reducing the age-related decline in physical activity should be a key goal of public health” [110] (p. 1). While the current study supports typical school provision of physical education, physical activity and sports as a viable strategy to potentiate a positive impact on physical activity participation, longitudinal studies are required to understand the interaction with aging.

Research on individual components of provision also exists, which contests the impact of typical school provision of physical education, physical activity and sports on the physical activity participation in girls [111–113]. Ha et al. [112] found no significant improvement in moderate to vigorous physical activity during physical education class in a sample of adolescents (of which almost 70% were girls). This finding was observed in both a typical physical education class control group and a self-fit experimental group with a minor modification to physical education classes consisting of fitness and game-like elements using self-determination theory principles. In another study, Dias et al. [111] also found no significant improvement in physical activity participation (steps) based on the quality and quantity of physical education facilities. Furthermore, a study that examined the contribution of tactical game models (e.g., netball) to MVPA found no significant effects on physical activity participation in girls [113]. It must be noted that negative experiences of physical education for girls hinder participation and, thus, may impact physical activity participation [114]. Indeed, perceived competence [115], skill acquisition [114] and weight status [116] are notable correlates of physical education participation in girls, which may explain some of the aforementioned variances. Thus, many of these factors should be considered by teaching personnel when implementing typical school provision of physical education, physical activity and sport programs.

While typical school provision of physical education, physical activity and sports demonstrated higher levels of physical activity participation in schools with higher levels of provision for boys, these findings were not significant at the group level ($p < 0.01$) or after the introduction of covariates ($p < 0.05$). It is considered that the gender differences pertaining to the impact of typical school provision of physical education, physical activity and sports on physical activity participation may be due to a higher participation in sports both in and outside of school for boys, which may account for some of the variances reported across many of the variables in the current study. Indeed, a greater participation in physical activity and sports in boys compared with girls is a consistent finding in the literature [11,30,117]. Therefore, it is considered that higher levels of typical school provision of physical education, physical activity and sports may be particularly pertinent to higher levels of physical activity participation in girls. It is noteworthy that low levels of sports participation in girls are hypothesized to occur due to gender stereotypes [118], body image [119,120] and ill-equipped sports coaches [121]. As such, strategies that consider these variables may be pertinent to increasing physical activity participation in girls.

4.1.2. Enjoyment of Physical Education

In the context of enjoyment of physical education, the findings of the current study demonstrated significant between-group differences (i.e., higher vs. moderate provision) that were maintained after the introduction of covariates. Boys and girls in schools characterized as having higher levels of typical school provision of physical education, physical activity and sports were found to have higher levels of enjoyment of physical education in comparison to schools with moderate levels of provision. It is noteworthy that enjoyment of physical education as a predictor of physical activity is a consistent finding in the literature [67,122,123]. Consequently, it is considered that higher levels of provision may be linked with higher levels of enjoyment of physical education and, thus, with enhanced levels of physical activity in adolescence. However, the literature also suggests a grade-related decline in levels of enjoyment of physical education in adolescent populations [124,125]. Interestingly, a grade-related decline in physical education participation [30] and physical activity levels in adolescents [6,11] is also a frequent finding in the literature and may be correlated to decreasing levels of enjoyment in physical education. However, longitudinal analyses are required to examine this hypothesis.

While there is a scarcity of data regarding the impact of different levels or individual components of provision on the enjoyment of physical education, to contextualize the aforementioned between-group differences, research has indicated associations with a number of factors that pertain to basic psychological needs such as intrinsic motivation [126], social belonging, perceived autonomy and physical competence [127]. Intrinsic motivation refers to "the enjoyment perceived upon action performed for its own sake" [123] (p. 2). This supports the association between action that is intrinsically motivated and enjoyment. Recent findings indicate that intrinsic motivation and intrinsic value toward physical education can be enhanced via perceived-autonomy-orientated teaching styles that are facilitated by physical education teachers, e.g., task, authority, recognition, grouping, evaluation and time (TARGET) [128–130]. In addition, perceived-autonomy-orientated teaching styles foster environments that promote perceived physical competence and social belonging, both of which are associated with higher levels of enjoyment of physical education as previously noted [127,131]. However, physical education classes taught by nonqualified physical education teaching personnel is a common finding in the literature, indicating that many physical education classes may not foster the appropriate perceived-autonomy-orientated teaching styles and, thus, enjoyment of physical education [30,132]. Schools with higher levels of typical school provision of physical education, physical activity and sports may also have higher levels of suitably qualified physical education personnel that stimulate the enjoyment of physical education via intrinsic motivation, social belonging, perceived autonomy support and physical competence [133]. Therefore, it is considered that schools with higher levels of provision may be prime models to solicit higher levels of enjoyment of physical education, and that the role of a suitably qualified physical education teachers to optimize enjoyment in physical education to participate in physical activity should be strongly considered.

4.1.3. Social Support from Peers to Participate in Physical Activity

In the context of social support from peers to participate in physical activity, the findings of the current study demonstrated significant between-group differences (i.e., higher vs. moderate vs. lower provision) that were maintained after the introduction of covariates. Girls in schools characterized as having higher levels of typical school provision of physical education, physical activity and sports were found to have higher levels of peer support to participate in physical activity in comparison to schools with moderate and lower levels of provision. There is a scarcity of conclusive evidence concerning the impact of different levels or individual components of provision on social support from peers to participate in physical activity. However, the importance of these data is supported by a plethora of empirical evidence that points toward the impact of higher levels of social support from peers on participation in physical activity outside of schools [134–137]. Few studies, however, have investigated the association between peer support and participation in school physical education, physical activity and sports. Notwithstanding this, social support and the influence of friends was found to be a factor in promoting participation in active transport to school, games in school and moderate to vigorous physical activity levels after school [138]. Furthermore, Wang and Eccles [139] observed strong correlations between peer support and extracurricular activities. Likewise, a systematic literature review of 19 studies found some positive interactions between peer-assisted learning and participation in school physical education, physical activity and sports [140]. Indeed, it is clear that peer support and an active friendship group plays an important role in physical activity participation [134,141]. Considering the potential for interaction among adolescents in schools, strategies that foster opportunities for peer support via peer-assisted learning or peer-supported activities [142] may increase the levels of social support from peers to participate in physical activity. Comparatively, a study that examined the connection between peers and their subsequent engagement in physical education found that "girls who are rejected by their peers and experience loneliness and isolation were more likely to report being disaffected from learning activities in physical education" [143] (p. 10).

This suggests the importance of placing emphasis on fomenting supportive relationships between peers as a viable strategy to enhance physical activity participation both inside and outside school.

There were no significant between-group differences for typical school provision of physical education, physical activity and sports and peer support to participate in physical activity for boys. Alternative motivational factors to participate in physical activity, aside from peer support, may have a greater influence. Indeed, a study based on motivation to participate in physical education for high school students [144] found that male students were intrinsically motivated by factors such as competition and challenges, which is a consistent finding in the literature [145]. Therefore, alternative strategies should be contemplated upon that consider the best practice to optimize participation in physical activity for both boys and girls.

4.2. Health

4.2.1. Body Mass Index

In the context of body mass index (BMI), the findings of the current study demonstrated significant between-group differences (i.e., lower vs. moderate vs. higher provision) that were maintained after the introduction of covariates. Girls in schools characterized as having lower levels of typical school provision of physical education, physical activity and sports were found to have higher levels of BMI in comparison to girls in schools with moderate and higher levels of provision. This finding is consistent with research that found significantly positive effects associated with individual components of typical school provision of physical education, physical activity and sports on BMI in adolescent girls [22,146,147]. Notwithstanding this, research also exists that debates the contribution of typical school provision to reducing body mass index in girls [148–151]. After 10 weeks of participation in a typical physical education class control group and a minor modification to typical physical education class experimental group that included swimming classes [148], no significant improvement in BMI was observed for girls. In another study, based on a typical physical education class control group and jumping activities experimental group (e.g., star jumps and jumping jacks), Weeks and Beck [151] also found no significant improvement. Furthermore, research that examined the contribution of sports fields and/or gymnasiums in schools to reducing BMI found no significant effects for girls [150]. Inconsistencies pertaining to the impact of typical school provision of physical education, physical activity and sports are hypothesized to occur due to a number of contributing factors. Lower levels of participation in physical education classes, school sports and physical activity (e.g., active transport to school) for girls is a consistent finding in the literature [6,11,30,152,153], which may hinder the desired impact of reducing body mass index. Furthermore, girls are considered to have varying metabolic rates [154,155]. Therefore, prescribing the correct dose of physical education, physical activity and sports time and intensity to achieve the desired effects on body mass index in girls according to metabolic rate may be appropriate. It is noteworthy that maturation during this phase of life also brings about a host of physiological adaptations in girls that may lead to some inconsistencies [156]. The aforementioned factors should be considered when optimizing typical school provision of physical education, physical activity and sports programs to reduce or even slow the grade-related increase in BMI in girls.

There were no significant between-group differences for typical school provision of physical education, physical activity and sports and BMI for boys. This is inconsistent with findings pertaining to individual components of typical school provision of physical education, physical activity and sports (i.e., swimming, physical activity with heart rate monitoring and provision of sports fields and gymnasiums) that found favorable outcomes for BMI in boys [148,150,157,158]. Therefore, future research may consider examining the cause and effect longitudinally rather than through a cross-sectional study design such as in the current study. While there is a wealth of data pertaining to the impact of physical activity and sports outside of schools on BMI in girls and boys [159], it must be noted that much of the extant research constitutes intervention studies with minor modifications to typical provision or intervention studies with minor modifications to typical provision or intervention studies that are outside the realms of "typical" provision, i.e., distant from national/state curriculum, resource base, ethos and what the school typically provides [160].

4.2.2. Somatic Health Complaints

Trends in the literature indicate that the prevalence of health complaints increases with age [161–163]. Furthermore, health complaints are correlated with a range of negative behaviors such as high school dropout [164,165], screen time [166–168], loneliness [169,170] and sleep duration [171]. Therefore, strategies to combat health complaints in adolescent populations are warranted. In the context of somatic health complaints (i.e., headache, stomache, backache, dizziness), the findings in the current study demonstrated significant between-group differences (i.e., lower vs. moderate vs. higher provision) that were maintained after the introduction of covariates. Boys in schools characterized as having lower levels of typical school provision of physical education, physical activity and sports were found to have higher levels of somatic health complaints in comparison to schools with moderate and high levels of provision. Therefore, it is considered that whole-school, systems-based approaches that consider multiple components of typical school provision of physical education, physical activity and sports (e.g., adequate participation, budget, personnel, facilities, equipment and budget) to a moderately high level may illuminate positive interactions with lower somatic health complaints in comparison to schools with lower provision. This finding lends itself to the International Society for Physical Activity and Health's [24] eight investments that work for physical activity, which advocates for systems-based, whole-school approaches to physical activity in schools for the betterment of adolescent health, amongst other research [13,23,27].

The impact of physical activity participation outside of school on somatic health complaints in boys has previously been established and has been found to serve as a protective mechanism against health complaints [168]. Although there is a dearth of evidence that investigates the impact of typical school provision of physical education, physical activity and sports on somatic health complaints, it is hypothesized that participation in school physical education classes, physical activity opportunities (e.g., active recess) and sports teams may also serve as a supplementary process and protective mechanism against somatic health complaints, particularly in boys. It must be noted that the health costs associated with physical inactivity are in excess of USD 27.4 billion annually [10]. Additionally, a mere 20% of adolescents engage in physical activity and sports outside of school hours, limiting their development of lifelong physical activity skills [20,172,173] (p. 2). Given that physical activity habits established during adolescence are found to track into adulthood [41], schools are therefore considered primary vehicles for achieving pertinent change in the health status of adolescents and alleviate the economic burden of disease. The current findings suggest that moderate–high levels of typical school provision of physical education, physical activity and sports may serve as a primary means of achieving such changes, particularly in boys. Nevertheless, further research that examines these findings longitudinally is required. It is noteworthy that although it is acknowledged that maturation during this phase of life contributes to acute health complaints in adolescents [174], the samples associated with each level of provision were from the same year group in the Republic of Ireland. This suggests that adolescents were of similar developmental stages, which to some extent controlled for the influence of maturation in the current study.

There were no significant between-group differences for typical school provision of physical education, physical activity and sports and somatic health complaints in girls. Although higher levels of somatic health complaints in girls is a consistent finding in the literature [168,171,175,176], the current study suggests that a higher typical school provision of physical education, physical activity and sports may not serve as a protective measure. The literature indicates that reciprocated best friends and peers to engage in emotional communication with are strongly linked with reduced somatic health complaints in girls [177]. Given the low participation rates in school physical education, physical activity and sports, especially among girls [20,178], it is considered that girls may perceive that there are limited opportunities for emotional communication within these contexts. Therefore, girls may prioritize seeking opportunities to foster peer interactions and social relationships elsewhere, which could explain the aforementioned variance. Accordingly, strategies to increase participation in school physical education, physical activity and sports that advocate for peer interaction, particularly in girls, should be considered a key component of typical school provision and a potential factor in reducing somatic health complaints in comparison to boys. Recent data suggest that girls with higher total screen-based behaviors report significantly more health complaints [158,179]. Consequently, this may serve as an undermining measure to the positive effects of typical school provision of physical education, physical activity and sports otherwise seen in boys. However, further research is required to further explore this hypothesis.

4.3. Physical Activity Behaviors and Health Covariate Interaction

In the context of overall physical activity behaviors and health, the findings of the current study demonstrated significant between-group differences that were maintained after the introduction of covariates, supported by both parametric and nonparametric analysis. Many of these differences persisted despite the rigorous statistical approach previously outlined, providing a more nuanced interpretation of the data. However, it is noteworthy that significant between-group differences were also reported both solely in the unadjusted group-level analysis (self-efficacy, perceived physical competence) and solely in the adjusted covariate analysis (overall health complaints, sedentary behavior on weekdays). Covariates are defined as variables that may affect a response variable but are not of primary interest in a study [180]. The introduction of the study covariates including school type, school location, socioeconomic status, sickness in the last seven days and/or physical impairment isolated the effects of typical school provision of physical education, physical activity and sports.

Significant between-group differences were observed only before the introduction of covariates for higher self-efficacy (moderate–higher vs. lower provision) and higher perceived physical competence (moderate vs. lower provision) in girls. These findings suggest that the association between typical school provision of physical education, physical activity and sports with self-efficacy and perceived physical competence may also be influenced by the study covariates, further emphasizing the “benefit from accommodating the nuance of covariate analysis” found in the literature [181] (p. 2). It is worth noting that findings concerning the impact of typical school provision of physical education, physical activity and sports on self-efficacy and perceived physical competence are consistent with research that indicates significantly positive effects associated with individual components of typical school provision (i.e., classroom climate, curricular models, team games) [182–184].

The effect of the covariates emphasizes the complexity of examining the impact of typical school provision of physical education, physical activity and sports [185] on adolescent physical activity behaviors, health and wellbeing. Significant group differences were observed after the introduction of covariates for higher overall health complaints (moderate vs. lower–higher provision) and higher sedentary behavior on weekdays (moderate vs. lower provision) in girls. It is noteworthy that the findings on sedentary behavior on weekdays are inconsistent with research that indicates significantly positive effects associated with individual components of typical school provision of physical education, physical activity and sports (i.e., physical education participation) on sedentary behavior [108]. However, empirical evidence exists that underpins the association between elevated physical activity opportunities and decreased overall daily energy expenditure [186]. The concept of “compensation theory”, in which individuals exhibit a compensatory response to increased physical activity, may explain some of the aforementioned findings that report that higher levels of typical school provision of physical education, physical activity and sports demonstrate both higher levels of physical activity participation and sedentary behavior on weekdays [187]. However, further investigation is warranted in this research area.

4.4. Wellbeing

In the context of wellbeing (wellbeing, life satisfaction), the findings of the current study demonstrated no significant between-group differences at the group level or after the introduction of covariates. This is inconsistent with the overarching targets of whole-school, systems-based approaches to physical activity to "offer a great foundation for building a culture of wellbeing" [188]. An evidence base pertaining to the positive impact of individual components of typical school provision of physical education, physical activity and sports on wellbeing and life satisfaction in adolescents, such as high-intensity interval training, use of curricular models, and delivery of quality physical education with a focus on the development of emotional intelligence, further illuminate the inconsistency of these findings with the current literature [189–191]. The disparities between the data gleaned in the current study and existing research is hypothesized to occur due to the rigorous and conservative statistical approach utilized in the current study. It is important to note that typical school provision of physical education, physical activity and sports demonstrated higher levels of wellbeing in schools with higher levels of provision in girls, in addition to higher levels of life satisfaction in schools with higher levels of provision in girls and boys. Although these findings were not statistically significant at the group level ($p < 0.01$) or after the introduction of covariates ($p < 0.05$), there is a sufficient rationale to warrant additional exploration of these data.

4.5. Strengths and Limitations

The current study is the first of its kind to conduct an examination of the impact of different levels of typical school provision of physical education, physical activity and sports on adolescent physical activity behaviors, health and wellbeing. The PABHAW questionnaire was assembled using variables with established validity and reliability. The sample is nationally representative of school type and socioeconomic status. Extensive analysis was conducted throughout, including parametric and nonparametric equivalent analysis to validate the findings. Covariate analysis including school type, school location, socioeconomic status, sickness in the last seven days and physical impairment levels was conducted to minimize bias. The concurrent examination of a wide variety of variables pertaining to physical activity behaviors, health and wellbeing ensured a comprehensive investigation into the impact of different levels of typical school provision of physical education, physical activity and sports.

However, there were some limitations that need to be considered. The cross-sectional nature of the current study prevents one from drawing causal inferences that would otherwise be obtained from longitudinal study designs. The examination of adolescent physical activity behaviors, health and wellbeing was carried out by means of the self-report PABHAW questionnaire (with the exception of BMI). Future studies may consider objective methods of measurement, particularly for the physical activity and health variables, to ensure more accurate measurements. The generalizability of these findings to countries/states with varying curricula, systems and protocols governing typical school provision of physical education, physical activity and sports may be difficult. The items pertaining to sedentary behavior do not account for the fact that adolescents may be engaging in multiple sedentary activities in parallel with one another, which should be considered when interpreting the results. Finally, achieving a perfect balance between maintaining a practical sample size for data collection and matched representation across the groups proved unfeasible.

5. Conclusions

Evidence-based insights into the impact of different levels of typical school provision of physical education, physical activity and sports on the physical activity behaviors, health and wellbeing of adolescents may further enable schools to optimize environments for health promotion and, thus, further enhance their contribution to public health policy. Although prior evidence illuminates the impact of physical activity outside of school on components of health in adolescents, the prevalence of disease, understood to track from adolescence into adulthood, and associated economic burden, necessitate the requirement for supplementary strategies. Therefore, an investigation into the impact of different levels of typical school provision of physical education, physical activity and sports on the physical activity behaviors, health and wellbeing of adolescents was conducted. The current study revealed that higher levels of typical school provision of physical education, physical activity and sports may significantly impact physical activity behaviors and health in adolescents, with particularly favorable outcomes for physical activity participation, body mass index, social support from peers to participate in physical activity and enjoyment of physical education in girls and somatic health complaints and enjoyment of physical education in boys. Therefore, it is suggested that higher levels of typical school provision of physical education, physical activity and sports, that encompass whole-school, systems-based approaches with personnel that are dedicated to provision, alignment with the curricular learning outcomes, accessibility and maintenance of facilities and equipment, availability of school sports teams and budget, school ethos, advocating for active transport to schools and the development of partnerships to promote physical education, physical activity and sports may be a suitable supplementary strategy to impact the physical activity behaviors and health of adolescents. However, longitudinal studies are required to corroborate these findings.

Supplementary Materials: The following are available online at https://www.mdpi.com/article/10.3390/youth3040084/s1, Figure S1: Bar Charts for each physical activity behaviors outcome variable and levels of provision (Error Bars 95% CI); Figure S2: Bar Charts for each health outcome variable and levels of provision (Error Bars 95% CI); Figure S3: Bar Charts for each wellbeing outcome variable and levels of provision (Error Bars 95% CI).

Author Contributions: Conceptualization, P.R. and C.M.; methodology, P.R. and C.M.; software, P.R. and C.M.; validation, P.R. and C.M.; formal analysis, P.R. and C.M.; investigation, P.R. and C.M.; resources, P.R. and C.M.; data curation, P.R. and C.M.; writing—original draft preparation, P.R., C.M., B.T.O.K., I.S. and P.M.-M.; writing—review and editing, P.R., C.M., B.T.O.K., I.S. and P.M.-M.; supervision, C.M., B.T.O.K., I.S. and P.M.-M.; project administration, P.R., C.M., B.T.O.K., I.S. and P.M.-M.; funding acquisition, P.R. and C.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by [Irish Research Council Postgraduate Scholarship] grant number [GOIPG/2022/555].

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of the University of Limerick (2022_09_22_EHS (ER) September 2022 for studies involving humans.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: All statistical data are presented within the manuscript and Supplementary Material.

Acknowledgments: We would like to acknowledge Manolis Adamakis and Duvessa McLaughlinfor their contributions to the manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

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